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Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

VOLUME 125, No. 15 OCTOBER 9, 1947

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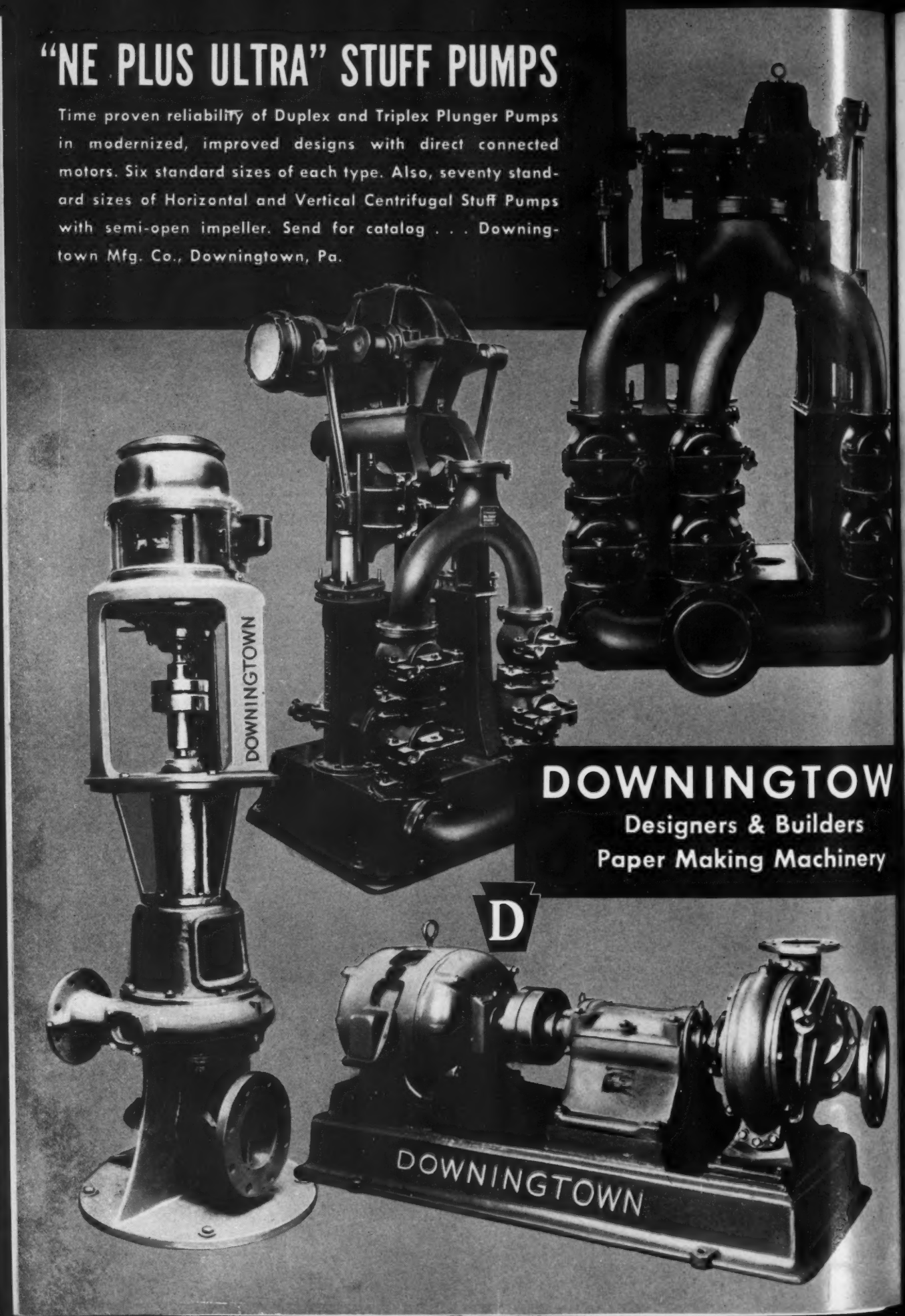

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Volume 125 — **Number 15**

Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

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CALENDAR OF COMING EVENTS

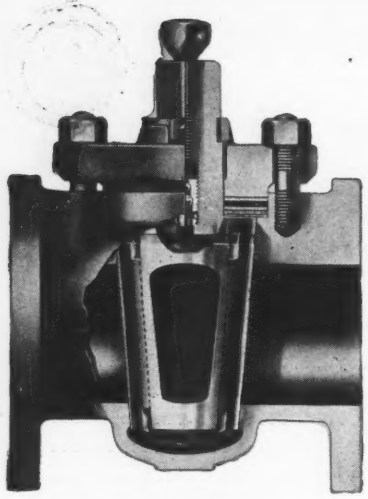
October 9-11, 1947—TAPPI Alkaline Pulping and Chemical Products Meeting, Asheville, N. C.

October 23-24, 1947—TAPPI Fibrous Agricultural Residues Meeting, Alton, Ill.

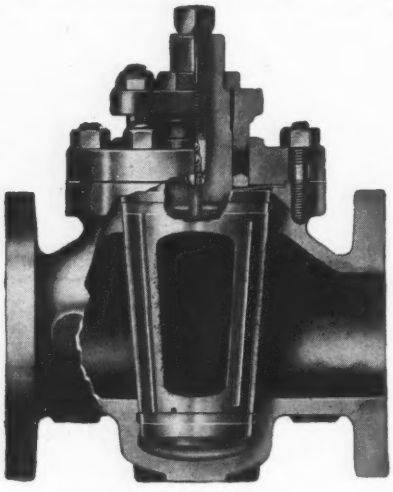
October 27-29, 1947—The National Paper Trade Association of the U. S., Inc., Semi-annual Convention, Hotel Sherman, Chicago.

November 3-5, 1947—TAPPI Second Engineering Conference, Philadelphia, Pa.

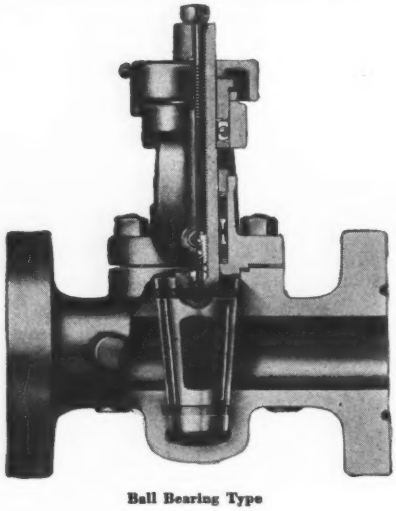
May 18-20, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.



Single Gland Type



Regular Gland Type



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Typical scene in magazine editorial office of the 1850's

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America's first magazine was published in 1741. During the next century many were started, but only one, *Godey's Lady's Book*, attained a circulation of as much as 150,000.

Not until the discovery of the wood pulp process made paper plentiful did magazines bring to largely increasing numbers what Dr. James G. Holland, an early editor of *Scribner's*, called "the intellectual food of the people."

Today more than 700 magazines with a total circulation of more than 110 million copies carry culture and entertainment to the home, and their advertising pages stimulate low cost distribution of a huge volume of consumer goods. Thus magazines, made possible by plentiful paper, have helped to make the United States the best informed of all nations, with the highest standard of living in the world.

The dramatic story of paper is told in the sound-and-color film, "Paper— Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.

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Among the new machines under construction by Puseyjones are three of the largest and fastest Fourdrinier Machines, including one for Kraft paper for multi-wall bags; also one Cylinder Machine of record size and speed for the manufacture of floor covering felt. Other machines are under construction for the manufacture of M. G. Kraft specialties, facial tissues, and high grade bristols.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

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Paper TRADE JOURNAL

VOL. 125, NO. 15 REG. U.S. PAT. OFF. OCTOBER 9, 1947

New England to Seek More Freight Cars

SPRINGFIELD, Mass. — Demand that New England's senators and representatives in Congress take immediate steps to form a bloc and seek relief for New England shippers and receivers of freight by bringing pressure "as have other sections of the country" on governmental regulatory bodies to "prevent discrimination against New England" was voiced by 500 shippers attending the fall meeting of the New England Shippers Advisory Board here at the Hotel Kimball.

Frank J. Gill, traffic manager of the Oxford Paper Company of Portland, Me., was ill and unable to read his report as general secretary of the Board.

His report, read to the meeting, said, however, that he predicted a 5.48 percent general business increase in New England in the last quarter of this year.

He found business men in general optimistic as to the outlook of business for the next three months. "Twenty-three of the commodity chairmen who reported to our board anticipate an increase in business, seven expect to decrease and 12 are unable to determine any particular change."

Approximately 500 shippers and railroad officials assembled in Springfield for the fall meeting of the board.

A sharply worded resolution, presented by Norris Ford of Hartford, Conn., executive vice-president of the Connecticut Manufacturers Association, called on Senator Wallace White of Maine, as senior senator of the New England delegation in Congress, to take immediate steps to get relief for this section of the country. The resolution was adopted unanimously.

The Advisory Board, representing 2400 shippers and receivers of freight, insisted through its resolution, that the senior senator of the New England delegation immediately call a meeting of the entire New England representation in Congress and take forceful steps to see that New England is at least given equal treatment with other sections of the country. The resolution contended that blocs in other sections have and are succeeding in having their sections of the country given preferred treatment to the detriment of this section of the country and its shippers and receivers of freight.

(Continued on page 24)

Forest Industries Group Meets at Eagle River

Woodpulp Is Included In Marshall Plan

WASHINGTON — European countries have asked for shipments of wood pulp for paper manufacture totaling $200 million in 1947 and $218 million in 1948 it is disclosed in a summary of proposals to be put in effect under the so-called Marshall plan, whenever such plan is authorized by Congress.

However, a comment in the same summary stated that "the estimates for woodpulp for paper making were specially examined" and have been scaled down by 20 percent as to quantities for the period 1948-51. This reduction brings the projected shipments to the 1947 level, in line with supposed available supplies, it was said. However, the summary added, while European estimates so far in advance were necessarily subject to error, it was believed that they revealed "the order of magnitude" of requirements that might have to be met.

These figures are contained in a summary of European requirements which was drafted by a committee headed by Ernest Bevin, Britain's foreign minister, and transmitted by Secretary of State Marshall to the President.

Canadian Prices to Include Differentials for Finishes

TORONTO, Ont. — Coincident with an advance of $5 a ton and upward on fine papers which became effective last week in Canada, it has been revealed that a new system of price differentials for different finishes, colors and types of packing will be introduced shortly. Specific prices in the various grades have not been stated, but it is believed that the price boost will result in increases ranging from ¼ cent a pound on book papers to 1 cent a pound on other high quality papers.

Price ceilings on pulps and waste papers were suspended September 15, following which the price of sulphite pulp has been raised $10 a ton. The announcement concerning the new system of differentials came from Howard Smith Paper Mills.

EAGLE RIVER, Wis. — Fifty members and guests of the Forest Industries Information Committee representing the principal paper, pulp, lumber and other forest industries of Michigan, Minnesota and Wisconsin, convened for a two-day session at the Trees For Tomorrow Conservation Camp, to review accomplishments and lay plans for future effort. This camp has for the past two years been under lease as a forestry demonstration project catering to nature clubs, conservation groups, educators and writers in an industry-sustained public relations program.

Chairman of the Wisconsin host delegation Folke Becker, president, Rhinelander Paper Company (also president, Trees For Tomorrow), welcomed the delegates, many of whom had traveled long distances to be present. He related some of the accomplishments of the Wisconsin Committee made possible through harmonious cooperation among the forest industries, public agencies, National and State legislators. He declared that Wisconsin again leads the nation in number of trees planted by industry as well as on farm woodlots.

John B. McAfee, secretary, FIIC, New York City, spoke on the background and organization of the Committee, which maintains a national office with 32 active state organizations, emphasized the public information purposes as being purely educational and free from lobbying methods.

L. A. Furlong, chairman of the Minnesota Committee, said his organization had continued a program of information with respect to national and state legislative needs. Due to the education carried out by industry the so-called Nursery Bill was passed by the State Legislature which will be of inestimable value in State production of seedlings and planting stock. Other accomplishments include the County Assessor's Bill, calling for a better equalization of taxes, the Auxiliary Forest Law and a bill for orderly licensing and rates for trucking. All of these measures were supported by data and information supplied by the Committee. The Committee provided the Division of Forestry with $8,000

(Continued on page 28)

McSweeney Elected By Perkins-Goodwin

NEW YORK—Louis Calder, president of Perkins-Goodwin Co., this week reported the election of Edward McSweeney as treasurer of the 100-year-old paper company. In commenting on the appointment, Mr. Calder said, "Edward McSweeney has been closely associated with Perkins-Goodwin for a number of years. His election as treasurer marks the completion of a program we started in recent years to take care of our rapidly expanding business."

A native New Yorker and a graduate of M.I.T. in Mechanical Engineering, Edward McSweeney has headed his own firm of Marketing and Management Consultants for the last 15 years, specializing in paper, printing and publishing. In graphic arts and publishing circles, Ed McSweeney is recognized as an authority.

EDWARD MCSWEENEY
Becomes Perkins-Goodwin Official

Materials Handling Show To Repeat at Cleveland

NEW YORK—The National Materials Handling Exposition will be conducted for the second year in the Public Auditorium in Cleveland, January 12-16, inclusive. Edwin J. Heimer, president of Barrett-Cravens Company, Chicago, is chairman of the exposition committee. One hundred and fifty-four exhibitors, 60 percent more than the number represented at the first show already have contracted for booth space. The exposition, which attracted more than 12,000 top management executives last January, will occupy almost 200,000 square feet of exhibit space, nearly three times the previous area, and thus will rank among the top fifteen national industrial expositions, Heimer said.

The show will run for five days, instead of four, and all systems of materials handling will be on exhibition to make the showing completely representative, he added.

Monsanto Promotes and Moves Arnold and Irving Smith

ST. LOUIS, Mo.—Arnold H. Smith, acting managing director of Monsanto (Australia) Pty. Ltd., has been elected vice-president and member of the board of directors of Monsanto (Canada) Ltd., and will assume his duties January 1, 1948.

At the same time Irving C. Smith, vice-president and member of the board of directors of Monsanto (Canada) Ltd., has resigned effective January 1 to accept promotibn to assistant general manager of Monsanto's Western Division, with headquarters at Seattle, Washington.

Solvay Names Draper To St. Louis Post

ST. LOUIS — Solvay Sales Corporation has appointed Neal M. Draper as manager of the St. Louis branch. Mr. Draper, who has been a salesman in the St. Louis territory for the past 12 years, succeeds M. S. Johnson, who has been transferred to the Boston office. Mr. Elmer Seener has been appointed assistant branch manager of the St. Louis branch.

The Solvay Sales Corporation handles sales of alkalies and chemicals manufactured by the Solvay Process Company. The Solvay St. Louis branch covers the territory of Nebraska, south through Oklahoma and Arkansas and west through and including the Rocky Mountain states.

Henry Sawin Joins Sheppard Envelope

WORCESTER, Mass.—Henry A. Sawin has been appointed as plant engineer and personnel director of Sheppard Envelope Company. He had been associated with the Wyman-Gordon Company for 11 years prior to his appointment. He was graduated from Bates College in 1936 and undertook special engineering courses at both Worcester Polytechnic Institute and Rensselaer Polytechnic Institute.

Simultaneonsly with Sawin's appointment as personnel manager, the Sheppard Envelope Company began distribution of a new booklet designed to better acquaint employees, customers and the public with the company.

LeBeau Enters Politics

NORTHAMPTON, Mass. — Arthur LeBeau, foreman at the Hampshire Paper Box Company, has announced his candidacy for the Democratic nomination for the common council from Ward 5.

Boon Speaks at Neenah Banquet

NEENAH, Wis.—Henry Boon, Kimberly-Clark Corporation vice-president, was the speaker at the fourth and final dinner party Thursday evening, October 2, in observance of the corporation's seventy-fifth anniversary, and honoring 58 long-service employes and their wives.

As was the case at the three earlier parties for veteran employees of the various mills, bonds and membership certificates to the Kimberly-Clark Quarter Century Club were distributed.

Fred Van Liew was toastmaster. Fred Seaborne, chief mill manager, accompanies Mr. Boon to Niagara Falls.

The first party was given for the veteran employes of the Appleton Atlas and Kimberly mills. The second was for old-time workers from Badger-Globe, Lakeview, main office and the field service divisions of the Neenah mills, and the third was for employes of the Niagara, Wis., mill.

Vaughn Is Feted on H. & W. Career

RUTLAND, Vt.—Herman W. Vaughan, one of Rutland's oldest and best known citizens, was feted recently on his 96th birthday, which he celebrated with his family.

In special honor of the occasion, his dinner guests were a group of officials of the Hollingsworth and Whitney Company of Boston, paper manufacturers, of which he is a director. They include James L. Madden, president; Robert Nivison, vice-president; M. L. Madden, chairman of the board; and Elliott Pratt, a company official.

The high point of the celebration came when the board chairman presented him with a gold watch and chain in honor of his birthday and in commemoration of his 70 years of service to the paper firm, with which he had been associated since 1877. He was also presented with a 70 years' service pin and a copy of the minutes of the executive board meeting at which the board voted to show him this recognition.

Kinzly To Serve on World Trade Panel

LOCKPORT, N. Y. — H. M. Kinzly, president of the Buffalo World Trade Association and export sales manager of the Upson Company, has accepted an invitation to serve as a member of the panel which will conduct a forum on current trade problems at the 34th National Foreign Trade Convention to be held in St. Louis on October 20 to 22.

Kinzly will be a member of a small group of the country's leading authorities on export problems.

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- **Uniform Metal Structure free from wall leaks.**
- **Maximum Strength to prevent distortion and breakage.**
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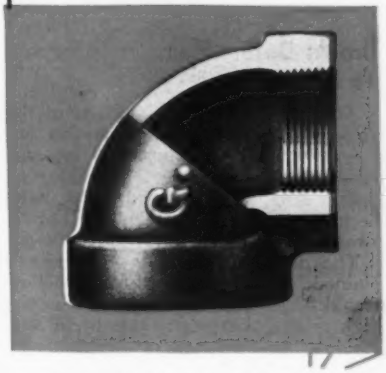

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Amco Humidification and Cooling Systems
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Supplier of . . .

Pipe, Valves and Fittings
Specialties for Plumbing, Heating, Water Works and General Piping

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WHENEVER PIPING IS INVOLVED

Armstrong Erecting Board Plant at Macon

MACON, Ga. — A new fibre board plant, now under construction for Armstrong Cork Co., will add a half million square feet to the daily board capacity of Southern mills when it begins operation early next year. Designed by the Rust Engineering Co., Birmingham, Ala., and Pittsburgh, Pa., to produce "Temlok" from loblolly pine, the new mill includes a production and warehouse area of nearly five and a half acres.

This modern production unit, which will be one of the nation's most up-to-date board mills, was designed to allow expansion of all facilities to accommodate future capacity increases.

The plant is a one-story building with a basement under the pulp mill end to accommodate stock tanks and pumps for the pulping process. A railroad siding has been depressed so that box cars spotted for loading are at the same height as the shipping floor.

The building has structural steel frame, concrete floors, pre-cast concrete roof, and tile walls with steel sash. Maximum overhead room, especially valuable in the storage area, has been provided throughout the mill by the use of roof beams, thus eliminating trusses. Main and mill office areas are air conditioned and have fluorescent lighting.

Pine logs for producing the board will be brought to the mill by truck and railroad and will be handled and stored by an electrically operated bridge crane. The wood will be run through slashers, the bark removed in a suspended type barking drum and then the barked logs will go to the grinders.

Two sets of grinders will be installed. Each set will consist of two grinders in tandem run by a synchronous motor. After grinding, the stock will be screened in centrifugal screens and then formed into board.

Board is formed in a continuous sheet and cut at the wet end after it leaves the press rolls. The sheets will be dried in a gas fired zone type multi-deck drier. The dry sheets will be trimmed and reduced to commercial size using a dry saw.

Handling in the warehouse area will be by electric truck. Board produced will vary in thickness from 3/8 to one inch. Daily production capacity will be the equivalent of 450,000 sq. ft. of 1/2 inch board.

Service facilities include a large machine shop and maintenance shop on the main floor and hand operated bridge cranes over all major items of equipment.

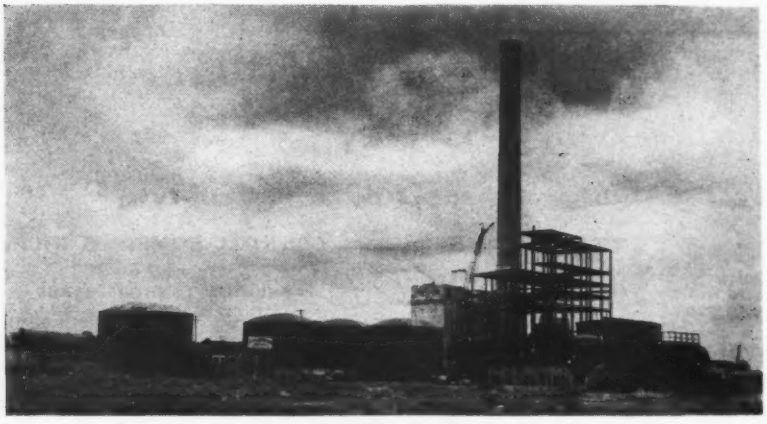
Canadian Boxes Records 200 Accident-Free Days

VANCOUVER, B. C.—Two hundred days of continuous operations unmarred by a single lost-time accident was the record achieved on September 15th by a Vancouver, B. C. manufacturing plant, Canadian Boxes Limited, 281-285 Industrial Street. Longest accident-free period previously attained by the plant was 69 days, reached last February.

The factory, a Pacific Mills' subsidiary, employs approximately 175 workers in the manufacture of solid fibreboard and corrugated chipboard shipping containers. It operates two shifts daily.

Celebrating the record accident-free run, employes were entertained at a plant ceremony attended by B. C. Workmen's Compensation Board officials and senior Pacific Mills' executives. Movies were shown and refreshments served.

A feature of the program was a demonstration of St. John Ambulance Association emergency first aid technique by a team from Pacific Mills' Vancouver Converting Plant.



SOUTHERN PAPERBOARD PLANT TAKES SHAPE

The Southern Paper Board division of Robert Gair is rapidly taking shape at Port Wentworth, Ga., near Savannah on the Savannah River and one of the most important industrial areas of the Southeast. Erected by the Steel Construction Company, of Birmingham and Pitsburgh, the Southern Paper Board plants contains five thousand tons of structural and plate steel from The Ingalls Iron Works Company, of Birmingham.

Bemis Starts Plant At Vancouver, Wash.

SEATTLE — R. D. McAusland, vice-president and Pacific Coast general manager of the Bemis Bro. Bag Company, has confirmed the signing of a contract for the construction of a plant at Vancouver, Wash., for the manufacture of multiwall paper shipping sacks. The contract has been awarded to the Ross B. Hammond Company, Portland, Ore. Construction will start at once.

Bemis now has a plant at St. Helens, Ore., in the buildings of the St. Helens Pulp and Paper Company. However, the space is inadequate for the extensive expansion of this business during the past few years and an entirely separate plant with adequate floor space has been needed for some time.

Bemis has been established on the Pacific Coast for many years. Its San Francisco plant was started in 1897. The Seattle plant followed eight years later. The plant at St. Helens was established in 1932 and the one at Wilmington in 1933. These two latter plants operate under the name of Bemis Paper Bag Company, a wholly owned subsidiary of the Bemis Bro. Bag Company. A fifth plant was opened in Los Angeles in 1946.

With this chain of plants, Bemis is able to give unexcelled service to users of shipping bags on the Pacific Coast.

Brooks Defers Plan To Expand Factory

SPRINGFIELD, Mass. — Plans of the Brooks Bank Note Company to enlarge its plant, enabling it to increase production and to meet a backlog of orders going back several years, have been "put off indefinitely," J. Loring Brooks, vice-president, has disclosed.

The company has reasoned, he explained, that the cost of construction would be so great now, under existing high prices, that postponement of any building construction would best be made, "pending a reaction in the high cost level."

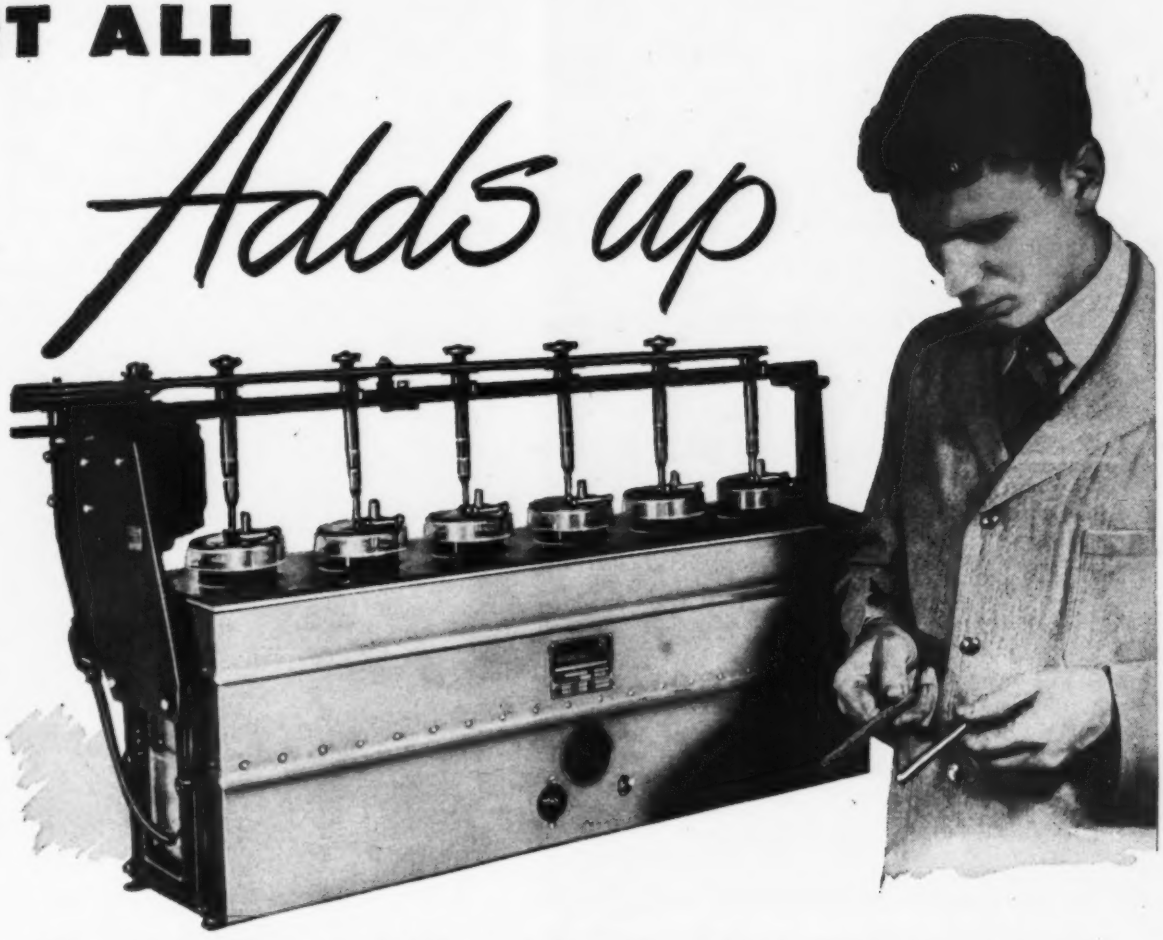
He said that new machinery still is being awaited, but that a steel lack is apparently holding it up, though some equipment is coming in slowly.

The company will continue to rent outside space, Mr. Brooks said. Though this is an inconvenience, since it involves separation between the warehouse and the factory, the company considers it better than building in view of the present cost situation, Mr. Brooks said.

Kimlark Credit Union Meets

NEENAH, Wis. — An organizational meeting of the Kimlark Field Service Credit Union was held October 1 at the Kimlark plant of Kimberly-Clark Corporation. Harry McLeod was elected president; Lyman Argust, vice-president; Ed Boehm, secretary; and John Seering, treasurer.

IT ALL *Adds up*



Where special qualities are essential for safe, enduring industrial lubrication, Sinclair Research develops additives that will "further improve the best".

Pictured above is one apparatus used by Sinclair Research to determine the rust-inhibiting efficiency of oils manufactured for turbine use. Chemical additives are studied to provide such protection against rust. Obviously, the treated oil sample used on the metal rod in the technician's left hand has high rust-inhibiting efficiency and prevented the deposit shown on the other rod.

All Sinclair Research and Refinery Control is similarly thorough. *It all adds up* . . . to assure you of lubricant qualities essential to efficient and economical industrial maintenance in all applications.

Sinclair Power Plant Lubricants
FOR MINIMUM FRICTION—MAXIMUM POWER

For Turbines:
SINTURLITE OILS

For Steam Cylinders:
SINCLAIR STEAM CYLINDER AND VALVE OILS

For Compressors:
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Western Group Buys Vancouver Timber

VANCOUVER, B. C. — A great stand of Vancouver Island timber has been sold to United States paper companies as a source of pulp logs. The deal transfers ownership of Elk River Timber Company and three smaller concerns to Sound View Pulp Company of Everett, Wash., Crown Zellerbach Ltd., and Jamieson Mills.

Though export of logs is at present under rigid federal control, it is believed the new owners intend to take logs from the area to supply their Everett pulp mill. Forest lands involved include 50-mile section of the Elk River basin from Campbell River to Muchalat Inlet.

Most timber from the area where 90 million feet were cut by Elk River Timber in 1943, was exported to the United States in log form.

The stand is rated by forestry department officials as "an exceptionally nice stand of fir and cedar, worth considerable thought, effort and money."

Confirming the purchase, L. S. Bruden, vice-president of Sound View Pulp, said by telephone from Everett this week that he "did not feel at liberty to disclose the amount of cash involved."

The new owners will attempt to create a "perpetual forest" which will yield timber for 100 years, he said.

"We are going in for reforestation, seeding and planting on a grand scale. We cannot say how much timber we can take out each year until we survey our holdings for reforestation."

The new owners intend to have 38 miles of logging railway and a 35-mile road on the tract and have already rehabilitated 19 miles of railway, Burden said.

Besides Elk River Timber, the timber holdings and equipment of British American Timber Company, Uncona Timber Company, and Rothmere Timber Company have been purchased.

Norwood Engineering Building Damaged by Explosion

NORTHAMPTON, Mass.—An explosion shook the office of the Norwood Engineering Company September 20 and blew out all basement windows.

Firemen found that a hot water heater had been started in the basemen of the building but two valves had not been opened to permit circulation of the water. The steam that was generated blew the water tank to bits, driving some of the metal into walls and completely through two-inch planking of a coal bin, fire department officials reported.

All windows in the basement of the building were shattered but officials said there was no fire. The caretaker of the frame office building was on the first floor at the time of the blast and was uninjured.

STANLEY H. REED

Who has been elected vice-president of the Crystal Tissue Company, Middletown, Ohio.

SAPEYES Suspend Luncheons For Football Season

CHICAGO — The western division of the Salesmens Association of the Paper Industry has voted to relinquish most of its fall business program to permit members to attend the weekly meetings of the Quarterback Club which are held in the Terrace Room of the Morrison Hotel. Each week the members and guests will be regaled with alibis of games played and forecasts of games to come as nationally known football figures parade in front of Chicago's football-minded citizenry.

The only exception to the program will be on October 27 at the time of the National Paper Trade Association convention. Some real preparations are being made for this luncheon event with a get-together luncheon set at the Hotel Sherman which is expected to tax the 200 limit seating capacity of that hotel's Crystal Room. All western division officers will be present and the officers of both the N.P.T.A. and A.P.P.A. will be invited to attend. There are to be no speeches — "but some entertainment designed to be relaxing." Ben K. Babbitt, Brown Company's cheerful contribution to the splendid work of the SAPEYES hospitality experts, is in charge of the reservations for the meeting which are to be open until October 10.

Bathurst Votes Extra Disbursement

TORONTO — Bathurst Power and Paper Co. has declared a quarterly dividend of 37½ cents plus an extra of 12½ cents, payable Dec. 1 to shareholders of record on Nov. 4. Previously the quarterly payment was 25 cents.

Drew Tells Plant to Cut Wood Exports

PORT ARTHUR, Ont. — Addressing a joint meeting of the Fort William and Port Arthur Chambers of Commerce here last week in honor of a group of visiting members of the Toronto Board of Trade, Premier George Drew promised to reduce the total export of spruce, balsam and jack pine from Canada crown lands to 200,000 cords within five years and "to nothing" within ten years.

Premier Drew announced that the reduction would be effected as follows:

1. Those who have built pulp mills in Ontario and have included in their contracts permission to export in connection with the logging operations for their own production in this province will have their annual quota reduced progressively each year by one-tenth of their last annual figures. This will bring their export to an end completely in 10 years.

2. Those who have been given export rights as a consideration for assisting in the erection of new pulp mills by vacating areas which had been allotted to them will have their quotas reduced progressively each year by one-quarter of their last annual export.

3. Those who have been working on short-term arrangements without any consideration such as those already mentioned will have their quotas reduced progressively each year by one-third of their last annual export.

Premier Drew said that this percentage of reduction is substantially greater than that recommended in the report of Maj.-Gen. Howard Kennedy on forestry.

"It would have two very positive results," Mr. Drew claimed. "In the first place it would make more wood available from the same total cut for our own mills so that production may be maintained at the highest possible level and, in the second place, it will increase very greatly the dollar export value of the trees we cut."

Premier Drew said it was not his intention at present to indicate what specific action would be taken in regard to any features of the Kennedy report, but he promised that the government would use the information in a way that "will assure a maintained stand so that we will not see in this province a repetition of the ghost towns which have already resulted from improper cutting methods in some places."

"Now we are in a position to deal definitely with the problem and we have the advantage of information placed before us in the Kennedy report. While permits were issued for larger amounts, actual exports from crown lands last year amounted to less than 600,000 cords. This is still too large an export of unprocessed wood."

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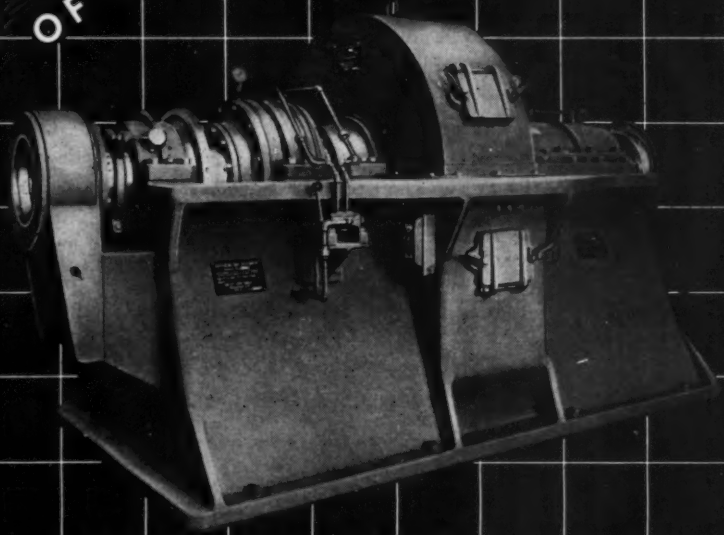

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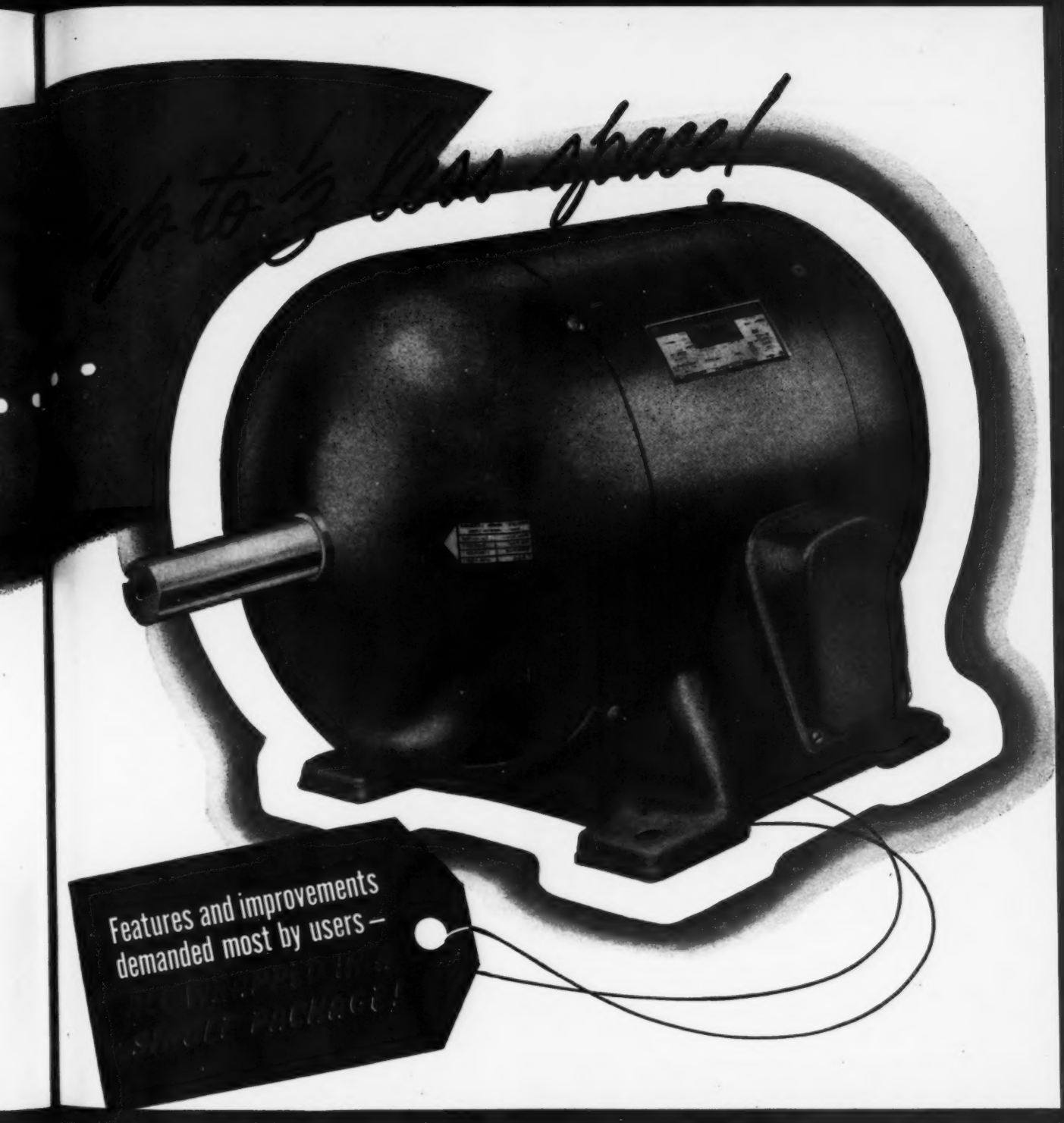

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FINANCE

Canada Share Prices Reflect Earnings

TORONTO, Ont. — Steadily increasing share prices of Canadian paper companies is attributed on the Street to the favorable news reported by the companies and the prospect of increased dividends. In the background, two, is the increased earning power of the companies as a result of increased productive facilities and the fact that the demand for paper still is far in excess of supply.

Of 13 companies, seven show share prices less than six times net profits and 10 selling at less than 9¼ times net profits.

In connection with several issues the prices of the shares are well above the traditional normal of ten times net profits. Moore Corporation, a seasoned earner, has a long record of substantial dividends, broken only once in many years. The price of Dryden Company shares has been mounting of late and is now 25.2 times net profits per share for the fiscal year ended September 30, 1946. Net for 1945-46 was many times that of 1944-45.

The price of St. Lawrence Corporation common is the highest of all in relation to earnings per share, being 45.32 times and the price is taken on the street as reflecting a substantial increase in net income, once a reorganization plan is worked out in relation to the company and its subsidiaries.

Pending changes that are scheduled to enable subsidiaries in addition to Brompton to pay dividends on their common shares largely owned by St. Lawrence Corporation, directly or indirectly, earnings of the three subsidiaries have been at a sharply increased rate. St. Lawrence Paper Mills in the first six months of this year earned at the rate of $3.50 per common share, although arrears of preferred dividends amount to $64.75 a share. Brompton Pulp and Paper Company during the same period earned at the rate of $4.48 a common share, against a dividend paid of $1 a share. Lake St. John Power and Paper Company in the like period earned a net profit at the rate of $15.02 per share per annum.

Public Service Corp. Registers Bonds

WISCONSIN RAPIDS, Wis. — The Wisconsin Public Service Corporation, Milwaukee, has registered with the Securities and Exchange Commission $4 million of 30-year first mortgage bonds. They will be sold competitively.

The company plans to spend about $1,500,000 between now and 1950 for purchase of capital stock in Wisconsin River Power Company to acquire and develop the Petenwell and Castle Rock hydro sites on the Wisconsin river.

Joining in the Petenwell project near Necedah, Wis., and estimated to cost $8 million, are Consolidated Water Power and Paper Company and the Wisconsin Power and Light Company. George W. Mead, president of Consolidated, is also president of Wisconsin River Power Company.

Nekoosa Votes Extra On Common Stock

PORT EDWARDS, Wis. — Nekoosa-Edwards Paper Company on September 29 announced a special dividend of 25 cents per share of common stock, in addition to a regular third quarter dividend of 25 cents, to stockholders of record September 20. Thus the total payment for the first three quarters of the year is $1 a share, or 4 percent on a share of $25 par value.

John E. Alexander, president and general manager, in announcing the dividend, summarized the year's financial and technical progress in a letter to stockholders.

During the first half of 1947, profits amounted to $1,458,000, after taxes, and working capital was increased $872,000 to a total of $6,861,000. However, Mr. Alexander pointed out, large capital expenditures are being made to prepare the company for the buyer's market when it comes.

His letter also told the stockholders that earnings statement covering the 12-month period from September 1, 1946, to August 31, 1947, is available upon request to the company.

Hinde & Dauch Tonnage At High Level

TORONTO — Hinde and Dauch Paper Company of Canada has experienced continued high level activity in both paperboard and box industries, T. E. Lloyd, treasurer, reports in a letter to shareholders accompanying dividend checks. "The totals of our tonnage productions up to the end of the third quarter were moderately better than for the similar period of 1946, when new all-time highs were reached," he stated.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending October 4, 1947

STOCKS

	High	Low	Last
A. P. W.	4⅞	3⅞	4⅞
Armstrong Cork Co.	50	48	50
Armstrong Cork Co., pf.	106	105¾	105¾
Celotex Corp.	30	27¾	29⅞
Celotex Corp., pf.	20½	20⅜	20½
Certain-Teed Products Corp.	18⅜	17	18⅜
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	23¾	23½	23½
Champion Paper & Fibre Co., pf.	106	105½	105½
Congoleum Nairn Co.	29½	28½	29½
Container Corp. of America	43	41	43
Container Corp. of America, pf.	102¾	101	101
Crown Zellerbach Co.	32⅞	30½	32⅞
Crown Zellerbach Co., pf. 4.20	104⅝	102⅞	104⅝
Crown Zellerbach Co., 4 pf. 4	122¾	115	122¾
Dixie Cup Co.	40½	37½	40½
Dixie Cup Co., A	53¼	52½	53
Flintkote Co.	39	35¼	38¾
Flintkote Co., pf.	106⅞	106⅞	106⅞
Robert Gair	10⅜	8⅞	10
Robert Gair, pf.	19¾	19½	19¾
International Paper Co.	55⅛	52⅞	54¾
International Paper Co., pf.	103	102½	103
Johns-Manville Corp.	44	42⅛	43⅞
Johns-Manville Corp., pf.	118	118	118
Kimberly-Clark Corp.	24⅝	22⅞	24⅝
Kimberly-Clark Corp., pf.	109½	108	109½
Mac Andrews & Forbes	37	36¾	36¾
Mac Andrews & Forbes, pf.	145	145	145
Marathon Corp.	23¾	22¾	23
Mead Corp.	22	20	21⅛
Mead Corp., pf. 4¼	....	....	....
Mead Corp., pf. 2	47¾	45¼	47
National Container Corp.	14⅛	13½	14⅛
Paraffine Companies, Inc.	71	69	71
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	29	26¼	28
Rayonier, Inc., pf.	37¾	36⅜	36⅞
Ruberoid Co.	63	59½	63
St. Regis Paper Co.	10¾	10⅛	10¾
St. Regis Paper Co., pf.	93½	92	92
Scott Paper Co.	46⅝	46	46½
Scott Paper Co., pf.	102½	102¼	102½
Sutherland Paper Co.	40¾	37¾	40¾
Union Bag & Paper Corp.	35⅞	34	35½
United Paperboard Co.	17⅞	17⅛	17½
U. S. Gypsum Co.	102⅜	99½	102⅜
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	42	41½	42
West Virginia Pulp & Paper Co., pf.	....	....	....

BONDS

Celotex Corp., 3¼s, '60	103¼	103⅛	103⅛
Certain-Teed Products Corp., 5½s, '53	....	....	....
Champion Paper & Fibre Co., 3s, '65	101	101	101
Mead Corp., 3s, '68	103	103	103

New York Curb Exchange

High, Low and Last for Week Ending October 4, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	44½	43⅜	43⅜
Taggart Corp.	....	....	....

BONDS

American Writing Paper Co., 6s, '61	102	102	102

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Brown and Tinker on N.P.T.A. Fall Program

CHICAGO — Fall convention of the National Paper Trade Association will be held October 27-29, with headquarters at the Hotel Sherman. A large number of manufacturers as well as members have made reservations at the hotel so that it is pretty well booked up.

The usual pre-convention session of the executive committee will be held Sunday afternoon, October 26. The opening meeting to which manufacturers and guests are invited, will be held Monday morning, October 27, and the program will be concluded Wednesday noon, the 29th.

The principal speaker at the opening session Monday morning will be Congressman Clarence J. Brown of Ohio, chairman of the House of Representatives Special Committee on Newsprint and Paper Supplies. Another Congressman to address the group will be Jack Javits who will have just returned from the European trip of the Congressional Committee to study conditions.

Several manufacturers of fine and wrapping paper lines, important to the trade, have consented to give short talks as will be announced in the preliminary program which members will shortly receive. Secretary Tinker of the American Paper & Pulp Association will discuss current industry conditions and problems. A guest speaker who knows a lot about trade organization work will be Paul E. Burbank, general manager of the National Stationers Association. Important committee reports will be presented in the divisional meetings.

Monsanto Moves Blake To Merrimac Division

EVERETT, Mass. — Dr. E. S. Blake has been appointed assistant director of research for the Monsanto Chemical Company's Merrimac Division, it has been announced here by Josiah B. Rutter, general manager of the division.

Dr. Blake joined Monsanto in 1936 as a research chemist in the rubber service department of the company's Organic Chemicals Division at Nitro, West Virginia. In 1942 he was promoted to group leader in the rubber service department and served in that capacity until his present appointment.

Gaylord Container Negotiates Agreement

ATLANTA, Ga. — Gaylord Container Company and Local 700 negotiated an extension of agreement to August 31, 1948, wih a wage increase and six paid holidays.

Motley to Talk at Luncheon

CHICAGO—Arthur Motley, president of the Parade Publication, is to be featured speaker at the annual luncheon of the Paper and Twine Association to be held in conjunction with the annual meeting of the National Paper Trade Association. The meeting will be held Tuesday noon, October 28, in the Crystal dining room of the Hotel Sherman.

BM&T Bids Welcome To Its Newcomers

SAN FRANCISCO — "Welcome to the BM&T Family," an attractive booklet recently distributed to its employees by Blake, Moffitt & Towne, pioneer Pacific Coast firm of paper merchants, has attracted much attention in the field of employee relations. One of the first publications of its kind to be produced by a paper distributing house, the booklet presents company policy in an interesting and pleasing manner.

The booklet is written in an easy-to-read, friendly style and answers just about every question an employee, new or old, might have. The reaction following the initial distribution was excellent, according to L. J. Dellwig, Blake, Moffitt & Towne personnel manager.

Opening with a message of welcome from James K. Moffitt, president of the corporation, the booklet presents the story of BM&T and its history during its ninety-two years of progress followed by sections on Responsibility, Salary, Merit Increases, Absences, Sickness, Vacations, Holidays, Leaves of Absence, Resignations, etc. The new employee is advised of the company's life insurance and retirement programs and the fact that during illness, his salary is commensurate with his period of service when such illness occurs. A detailed schedule is printed so that he knows at all times exactly what to expect. BM&T's employee booklet explains the manner in which starting salaries are determined; when and why increases are granted. The booklet concludes with a message from General Manager Otto W. Mielke, captioned "BM&T — Today and Tomorrow."

In order to assure uniform administration of the policies in each of the company's sixteen divisions located in the principal cities of the six western states from Canada to Mexico, another approach to the subject was required. This was the publication of a manual of administration provided for all levels of supervisors, setting forth in detail the sequence steps required to make company policy effective.

"Welcome to the BM&T Family" is a thirty-two page booklet of pocket size, printed in two-color duotone with interesting half tone illustrations to accompany the text. That its distribution has attracted much attention in graphic art circles is indicated by the number of requests for copies which the company has been receiving from customers and paper distributors in various sections of the country.

Thirty Employes Earn Westvaco Retirement

NEW YORK — Thirty veteran employees of West Virginia Pulp and Paper Company were retired October 1 under the company's retirement program.

Among those retiring were Thomas H. Stirling, resident manager of the company's Mechanicville, N. Y., plant for the past 40 years and a member of the board of directors since 1930; Charles A. Cass, secretary of the company since 1909 and a member of the board of directors since 1927, and Henry L. Condit, assistant secretary since 1915.

Others in the New York office who are retiring are Robert H. Buckie, Erik Hammarstrom, Leo T. Kuhn, Miss Isabella Ketcham, John R. Mathews, Miss Olive Sands and Axel Westerdahl.

Retirements in the plants are as follows:

Mechanicville, N. Y. — Thomas H. Stirling, resident manager; Oliver W. Carlton, Ralph N. Clarke, John Tweedie, Thomas I. Walker and Charles M. Wetherbee.

Luke, Md. — William Grimm, J. Grant Hayden, Thomas T. Holland, Victor S. Kalbaugh, John V. Niland, John J. O'Brien, James Walker and Frederick P. Wiseman.

Williamsburg, Pa.—Archie Gunnett.

Tyrone, Pa.—R. G. Heyl and Joseph A. Lightner.

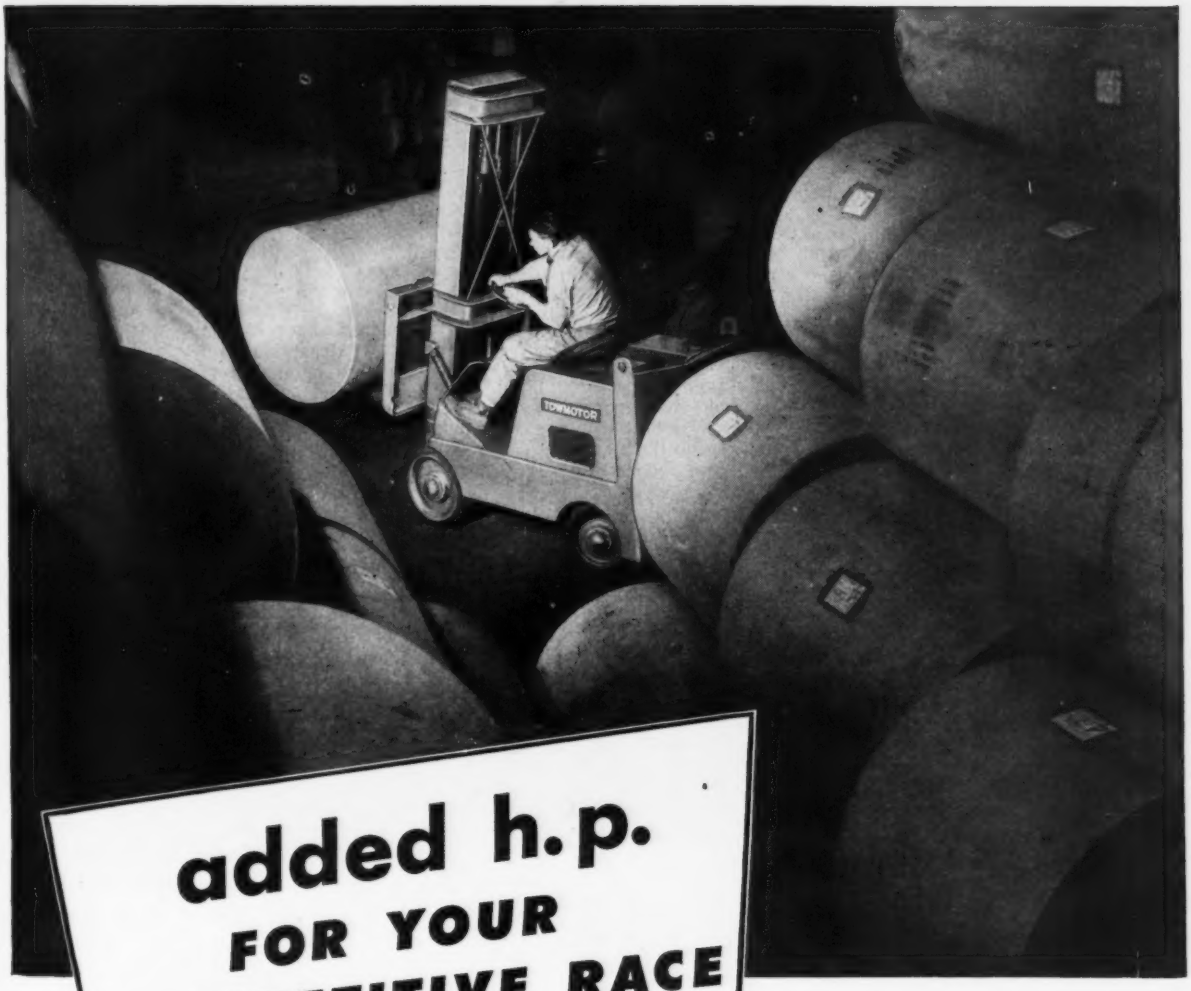
Covington, Va. — William Greig, William R. Kiley, David B. Landis and William M. Skeen.

The 30 retiring employees have been with the company a total of 1,212 years, and their average employment period is more than 40 years.

Fraser Pays Extra On Common Shares

TORONTO, Ont. — The high level of operations in the pulp and paper industry is being reflected this year in more generous treatment of shareholders in the form of increased dividends or extras. A recent member of this group to do so is Fraser Co. Ltd., which has declared an extra dividend of 50 cents per share to be paid along with the regular quarterly dividend of 50 cents per share on October 25th, to shareholders of record September 30th.

Demand for the company's products continued strong during the first six months of 1947 and as a result operations were at practical capacity. While the company is obtaining higher prices for all of its products this year as compared with the average for 1946, it is also faced with rather substantial increases in the cost of its principal materials as well as rather substantial increases in wages. Net profit per share for the year 1946 was $5.29, a new high in the company's history.



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Cooper to Decide Norwood Plant Use

NORTHAMPTON, Mass.—What use the Norwood Engineering Co. plant in Florence will be put to will be decided at a conference slated to be held in this city in the near future, it was learned from Abe Cooper, president of the Bagley & Sewell Company in Watertown, N. Y., when Cooper purchased the Florence plant under another corporation name and it was announced at the time that the plant would be put in operation.

Cooper would neigher confirm nor deny that the Norwood plant had been placed on the market for sale, but he did reveal that he was coming to Northampton in the near future and that a decision about the matter may be made at the conference to be held here.

The Bagley & Sewell president indicated that he had the interests of the community at heart and he advised that townspeople "not get nervous" about reports that the plant was for sale.

Some repairs have been made to the plant of the former Norwood company by the New York interests when they took it over and there were indications for a time that some manufacturing would be started there. However, of late, citizens interested in the matter were starting to lose hope.

New England to Seek More Freight Cars

(Continued from page 9)

Officials of the board maintain that New England railroads are still being required by regulatory authorities to forward every day, to designated lines, 500 empty box cars, even though these cars are sorely needed by local industries.

Such allocation of freight cars, they argue, is a waste of transportation in that, with efficient direction, a large proportion could be loaded here with loads without in any way adding to the freight car shortage. As a matter of fact, it would relieve this shortage, they contend.

Mr. Garen said he, and most of the industrial shippers in this area, supported this view strongly.

"It's pretty hard to watch empty box cars going by on their way to Chicago or some other point," he said, "while a lot of merchandise is left standing on our loading platforms waiting for cars."

Railroads operating in New England do not like the idea any more than do the shippers, it was pointed out, although they are helpless to do anything about it because they are obliged to take orders from the government. As a matter of fact, the plan works a hardship on New England roads that are forced to drag empty box cars to some point in the West without a cent of revenue when they could, with little delay, load these cars with New England merchandise and send them along, it was reported.

"Moving 500 empty box cars out of New England and hauling them hundreds of miles without loads is not, in our opinion, an efficient means of relieving the freight car shortage and it should be stopped," said William H. Day, traffic manager of the Boston Chamber of Commerce and chairman of the advisory board who will preside at the session in October.

Day said that while the government policy of commandeering 500 empty box cars daily will be one of the prime considerations to be aired at the meeting, the condition is being aggravated by failure on the part of shippers and receivers of carload freight to load and unload the cars as expeditiously as possible.

He also reported that the situation is also due in part to failure of the railroads to render, in many cases, the sort of service the public might reasonably expect. He called upon shippers and receivers to aid the general situation by expediting loading and unloading to the fullest possible extent. He said that rail carriers can expand the productive capacity of the available box car supply by speeding up the placement of inbound loads and the removal of empty cars from sidings and also by minimizing terminal delays and expediting line haul movements.

W. HARRISON LACKEY

District Manager of Sales for the Pittsburg District Sales Office of Lukens Steel Company and subsidiaries, By-Products Steel Corporation and Lukenweld, Inc., Coatesville, Pa. Lackey will make his headquarters at 429 Fourth Avenue, Pittsburgh. He succeeds Arthur H. Brown, whose appointment as District Manager of Sales for the Coatesville District Sales Office for Lukens and subsidiaries was recently announced.

Package Machinery Shows Its Wares

SPRINGFIELD, Mass. — A display of machines made for packaging all types of merchandise and a tour through the nine acres of manufacturing space occupied by the Package Machinery Co. in East Longmeadow was held recently for families of employees and the general public.

Boasting the most modern plant of its type anywhere, Package Machinery had taken over the wartime plant of Pratt and Whitney and converted it into manufacturing and engineering departments and general offices. The nine acres of manufacture space is under one roof and 4½ miles of fluorescent tubing is used to light the interior.

For the convenience of those with children a nursery and playground was supervised to care for the youngsters while adults made a tour of the plant. Refreshments were served the children.

The exhibit included machines used to wrap candy, cosmetics, gum and other products, photographs of other machines in operation and displays of safety, fire prevention and employee activities.

A special bus schedule for the day was run by the Springfield Street Railway Company.

Kimberly-Clark Celebrates Fire Prevention Week

KIMBERLY, Wis. — Fire Prevention Week was being observed this week at the Kimberly mill of Kimberly-Clark Corporation. There were displays and posters, and a number of demonstrations arranged to enable all shift workers to attend. An hour's program was given from 12:30 to 1:30 in the afternoon of October 8 at the clubhouse, for all employes. It dealt with fire prevention. Movies, talks and entertainment were included. A fire prevention program also was given from 12:30 to 1 o'clock the following afternoon for all day workers and salaried employes. The program wound up Thursday evening, October 9, with a dinner for all firemen.

Thilmany Delegation Visits Safety Meet

KAUKAUNA, Wis.—Representing the Thilmany Pulp and Paper Company at the thirty-fifth National Safety Congress in Chicago from October 6 to 10, inclusively, are Mrs. Hazel Leedke, nurse; Clifford Kemp, safety director; and L. C. Smith, industrial relations director.

Mrs. Leedke is chairman of the industrial nursing section of the National Safety Council and is presiding at its meetings. Kemp and Smith were scheduled to appear on discussion panels.

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Institute Offers Two Statistical Courses

APPLETON, Wis.—From a statistical group that was set up at the Institute of Paper Chemistry three years ago now a full teaching program in statistical method has been made effective with two courses in the subject. This instruction will be supplemented, of course, by more informal experience in the same direction.

The first-year course is concerned particularly with the rationale of statistical method. An attempt is being made to give the feeling of statistical argument by considering in some detail four groups of statistical operations. First, there is a group of lectures centered on the study of variability, wherein the analysis of variance will be studied in some detail; the group will conclude with a consideration of process control methods of the type developed by W. A. Shewhart. The second group deals with the fitting of functions, linear and curvilinear, with single and multiple dependency; the subject of correlation is considered simultaneously. A third group deals with the theory of sampling and will stress particularly the question of economy of operations. The concluding series deals with a discussion of the design of experiments and the analysis of experimental results. The treatment throughout the series of lectures will derive the necessary conclusions in most cases from first principles, and thus stress the fundamentals of statistical thinking. The overall aim will be to give the students an idea of the possibilities and, perhaps of more importance, the limitations of statistical procedures. Wherever possible, it is planned that the examples and practical work will deal with problems directly related to the industry.

The third year course is concerned with facility in the application of statistical techniques in experimental problems. It is important that a man recognize the statistical elements of his problem. The treatment is of a more informal type and resembles the conferences that are normally held among technical workers. The instructor meets the students and discusses the treatment of quantitative problems as they arise. So far as possible, the problems are to be raised and solved by the students. These problems may arise in connection with the student's own research or from his practical experience in the industry. To supplement the very practical nature of this course, it is necessary to introduce certain topics of a more advanced nature in order to round out the student's knowledge and experience in the field. This course, it is hoped, will develop in background with the years; perhaps it will help to create the literature of statistical application to problems of papermaking.

The statistical program at the Institute of Paper Chemistry is under the direction of Dr. Geoffrey Beall. Dr. Beall joined the Institute staff three years ago, when he came from the Canadian Dominion Department of Agriculture where he had been employed for many years in statistical analysis. His formal training in this specialty was obtained at the University College, London, where he studied under both Karl Pearson and R. S. Fisher. This college has attained international recognition for the development of a great number of the powerful statistical tools now available for use.

OBITUARY

George Fiske Hardy

NEW YORK — George Fiske Hardy, who was responsible for the design of many of the leading pulp and paper mills and hydroelectric power plants in the United States, Canada and Mexico, died October 2 in St. Luke's Hospital, after an illness of several weeks. His age was 82. He designed the first mill to make newsprint from southern pine at Lufkin, Tex., and recently completed the first modern sulphate pulp mill in Mexico.

Just before his fatal illness he was working on the design of the 600-ton-per-day kraft liner board mill for the Macon Kraft Company at Macon, Ga.

Mr. Hardy was senior partner of George F. Hardy & Son, consulting engineers, 441 Lexington Avenue, and a director of the St. Croix Paper Company of Woodland, Me.

Born in Poquonock, Conn., a son of George F. and Jane Smyth Hardy, he received a B.S. degree from Dartmouth in 1888 and an honorary Sc.D. degree in 1926. He began as an engineer in the employ of D. H. and A. B. Tower of Holyoke, Mass., specialists in pulp and paper mills, and later was made a junior member of the firm, which became A. B. Tower & Co.

In 1896 Mr. Hardy resigned to build a mill for the Hudson River Pulp and Paper Company, Corinth, N. Y. The next year he built a mill for making newsprint for the Laurentide Paper Company, Grand Mere, Quebec, which was the first of its kind in Canada. In 1898 he was appointed chief engineer of the International Paper Company, which controlled the principal paper mills of the country after they were combined. He resigned in 1901 to acquire the Tower business, which had in the meantime moved to New York.

Mr. Hardy built a large number of paper and pulp mills and power plants since 1901, including the 275,000 horsepower hydroelectric plant at Abitibi Canyon, Ont., in 1930-1932. He also had designed the Kapuskasing, Ont., plant of the Spruce Falls Power and Paper Company, Ltd., the capital stock of which is owned by The New York Times Company and the Kimberly-Clark Company.

Since 1932 Mr. Hardy engaged largely in the development of the kraft pulp and paper industry in southern states, which included mills in Savannah and St. Mary's, Ga.; Fernandina and Port St. Joe, Fla., and the Bogalusa and Monroe, La.

In 1896 he married Johnetta Beall of Xenia, Ohio, who died in 1925. Surviving are two sons, George Fiske and John Alexander; a brother, Fred R.; a sister, Ida A. Clark, and seven grandchildren.

William Eibel

MARINETTE, Wis. — William Eibel, 74, retired paper mill executive, was found dead of heart disease in his home here September 28.

In 1922 he and his late wife moved to Menominee, Mich., from Rhinelander, where they had lived for 22 years and where Mr. Eibel was an official of the Rhinelander Paper Company. He had retired in 1918 to move to California for his health, but returned to Rhinelander briefly before coming here.

Between 1926 to 1928, he was manager for more than a year of the former Peshtigo Paper Company, now the Badger Paper Mills, Inc., at Peshtigo. He was a member of the Masonic lodge at Rhinelander. A brother, a niece and a nephew are the only survivors. Services were conducted here October 1.

Miss Jemina Bell

MILWAUKEE, Wis. — Miss Jemima Bell, 81, industrial nurse at the Thilmany Pulp and Paper Company mills at Kaukauna from 1918 until her retirement in 1935 and a member of the Thilmany Quarter-Century Club died at a sister's home here on September 15, after a long illness. Funeral services were conducted September 18 at the Methodist church in Kaukauna.

Gertrude Goodwill

WATERTOWN, N. Y.—Gertdude Goodwill, affectionately known to her many friends as Toby, wife of Frederic C. Goodwill, suffered a cerebral hemorrhage Sunday, September 21, and passed away Tuesday, September 23, at the local hospital without regaining consciousness. Her funeral was held at the family home, 221 Ten Eyck Street, at 2 p.m., September 25, and interment was at the Black River Cemetery. Surviving besides her husband, who is technical director of the Book Paper Division of the St. Regis Paper Company, are two sons and two daughters.

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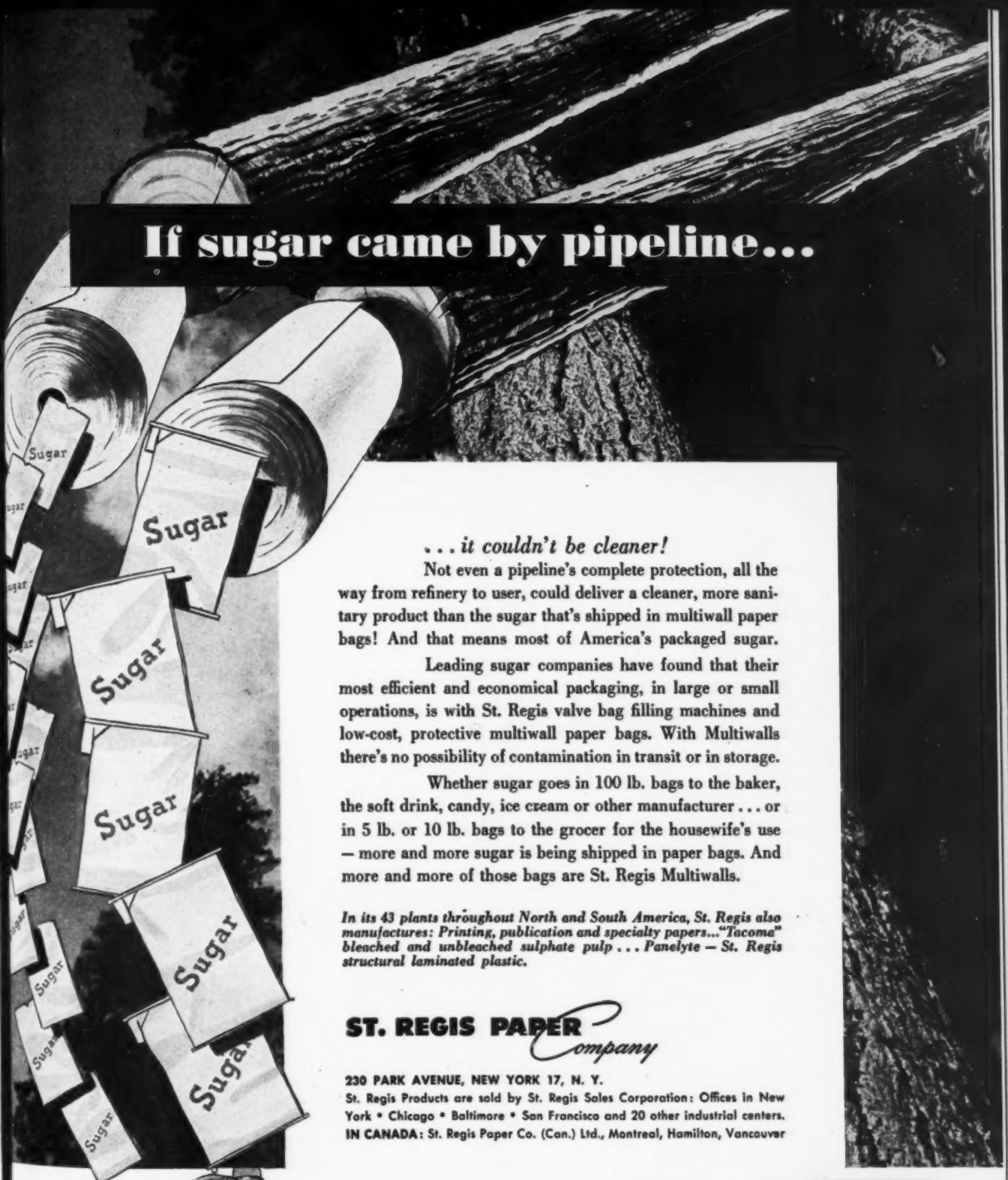

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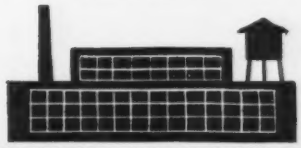

BUSINESS AND INDUSTRY

The St. Regis Engineering Division offers custom-built packaging systems to meet the requirements of different industries.

Forest Industries Group Meets at Eagle River

(Continued from page 9)

for the purpose of hiring two foresters to assist farmers and small loggers in properly growing and cutting their timber and also sponsored an increase of appropriation for the Division.

C. G. McLaren, vice-president and general manager, Tomahawk Division, National Container Corporation, led an exceedingly interesting discussion on the history and progress on industrial forestry in Wisconsin which was supplemented by talks by F. G. Kilp and E. B. Hurst, managers of timber departments of Nekoosa-Edwards Paper Company, and Consolidated Water Power and Paper Company, respectively, followed by animated questioning by delegates on costs, methods and species used.

According to Mr. McLaren the history of industrial forestry really dated from the passage of the Wisconsin Forest Crop Law in 1928, although Nekoosa-Edwards Paper Company had started their program in 1926. Up to this time there had been no organized fire protection. The full realization of a large forestry program was referred because of the depression in the early 1930's, which prevented industries from taking advantage of current cheap land prices. About this time the trend in pulpwood turned from logs to 100" wood and the timber supply of second growth was well exploited and thereafter land gradually began to establish value. The Tomahawk Kraft Paper Company acquired some 70,000 acres of land, a good deal of which has been planted and the bulk of which is subject to natural reproduction.

F. G. Kilp, Nekoosa-Edwards Paper Company, declared that in 1926 when his company began a forestry program it was necessary for them to establish their own fire protection but with the present splendid state fire protection, timber is now an excellent risk. Experience in planting over 20 years has brought him to the conclusion that Norway pine is beter than jack pine, machine planting is better than hand planting, and that natural reproduction is better than planting. However, neglected lands tend to grow up to undesirable species and this factor must have some attention.

E. B. Hurst, Consolidated Water Power and Paper Company, stated that the lack of available acreage is now the chief drawback to further expansion of industrial forestry. The largest increment of forest lands is in the county forests which are subject to the control of county boards who seem now to be less eager to dispose of the lands to private ownership.

Responding to a question by Mr. Lyons asking to what extent spruce was being planted, Mr. Hurst said that his company had planted some 5,000 acres.

There was some variation of experience in costs of planting. Mr. Kilp quoted figures of machine planting at $3.50 to $4 per acre with a machine, exclusive of planting stock. Including the cost of planting stock at Wisconsin prices, would bring the total cost to $6 to $6.50 per acre.

Clarence Prout, Minnesota Division of Forestry, said that under the new Minnesota Nursery Bill, the Department would be able to produce planting stock for whatever species were appropriate for growth by industry and for public planting.

F. G. Wilson, Wisconsin Conservation Department, suggested increased balsam experimentation as an aid to timber supply for other than kraft papers.

Charles Gillett and James McClelland, representing American Forest Products Industries, Inc., described that organization as one belonging to all branches of the Forest Industries and devoted to the beenfit of all. They recited in detail the educational material provided to schools; publicity and advertising extoling industrial importance and accomplishments, and forestry extension manifested in the Tree Farms, Keep Green and Trees for America programs; making the scope of AFPI an important one.

F. G. Kilp presented a detailed account of his investigations in Colorado concerning the insect damage to Engelmann spruce in the national forests where billions of board feet of timber had been killed. With quick action, a substantial percentage of this timber might be salvaged for use in the pulp industry and he cited the adjustments that would have to be made with respect to stumpage prices, transportation costs and other details.

On Friday, the delegates inspected the Fire Protection Headquarters of the Wisconsin Conservation Department at Tomahawk, Wisconsin, where we were introduced to the latest improved items of fire fighting equipment. After this demonstration, they were guests of Mr. McLaren and the National Container Corporation at luncheon at the plant, which was the final item on the program.

Committee members from Michigan and Minnesota expressed their astonishment at the visual proof of industrial forestry progress in Wisconsin and the accomplishments registered by both the Wisconsin Committee and the Trees for Tomorrow organization.

Folke Becker, who had held the office of chairman of the Wisconsin Committee for the past three years, resigned and Stanton Mead, vice-president, Consolidated Water Power and Paper Company, Wisconsin Rapids, was elected in his place. Mr. Mead's company is one of the leaders in industrial forestry and has more than 100,000 acres under forest management. V. I. Ruhmer of Phelps, representing the lumber industry, was elected vice-chairman; O. T. Swan of Oshkosh and Harold S. Crosby, Madison, of the Northern Hemlock and Hardwood Manufacturers Association, continued to serve as treasurer and secretary, respectively.

Southern Mills Open New Pulping Contest

COLUMBIA, S. C. — A third Statewide pulpwood thinning contest got under way October 1 and will end February 29. The contest is being sponsored by the Champion Paper & Fibre Company, the International Paper Company, the Union Bag & Paper Company and the West Virginia Pulp & Paper Company. The following prizes will be awarded: State winner, $250; three district prizes of $150 each; county first prize of $25; second prize $10; and third prize $5.

PAPER INSTITUTE CLASS TOURS NEPCO OPERATIONS

Members of the entering class of the Institute of Paper Chemistry, Appleton, Wisconsin, together with two members of the Institute staff recently stopped at Port Edwards, Wisconsin, to visit the mills and other operations of the Nekoosa-Edwards Paper Company, on their way back from a field trip into the woods. They were conducted on a tour of the Nepco mills at Port Edwards and Nekoosa, Wisconsin; Nepco Lake, and the company's reforestation operations. Nekoosa-Edwards was selected because of its completely integrated operations from seedling pine to finished paper. Dr. Irving H. Isenberg and Mr. Sidney Wells of the Institute of Paper Chemistry staff directed the class on the field trip.

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Northwest A.P.P.S.A. Talks About Labor

WAUSAU, Wis. — The Northwest division of the American Pulp and Paper Superintendents Association, meeting here September 26 and 27, devoted much of the session to discussions of federal labor legislation and to labor trends.

At the business meeting Saturday, S. E. Ekman, Rhinelander Paper Company, Rhinelander, was advanced from first vice-chairman to chairman; Frank Kreling, Thilmany Pulp and Paper Company, Kaukauna, to first vice-chairman; Lawrence S. Sabatke, general superintendent of Marathon Corporation's Rothschild plant, who was secretary-treasurer, second vice-president; and Mace Harris, Northwest Paper Company, Cloquet, Minn., secretary-treasurer. The retiring chairman was R. E. Nugent, Nekoosa-Edwards Paper Company, Nekoosa.

About 200 persons attended the dinner Friday evening at the Elks club, after attending a cocktail party given by the affiliates, with C. L. Durkee of D. J. Murray Manufacturing Company of this city as chairman.

Present at Saturday's meeting were Charles Reese, Nekoosa-Edwards second vice-chairman of the national group, and F. C. Boyce, Wauwatosa, trustee of the national association. Both the division and the national association were founded here in 1919 by Mr. Boyce, formerly of this city.

Addressing the business meeting Saturday morning, Urban C. Remmel, director of industrial relations of the Four Wheel Drive Company, Clintonville, Wis., predicted that the American Federation of Labor and the Congress of Industrial Relations will make a strong drive to organize the clerical ranks, including all retail clerks, and that union leaders will ask for royalty payments to unions based upon either a single product or a group of products. In the case of the United Mine Workers 10-cent royalty per ton of coal, he reported that a proportionate markup on this royalty payment by handlers advanced the cost to the consumers about 30 cents a ton.

He also expressed belief that guaranteed annual wages will be sought for most union contracts. He said the plan has worked thus far only in the food industry. In addition, he predicted, most contracts will call for a retirement plan paid for by the employer.

The background of the legal history of the Taft-Hartley labor law was sketched by Mr. Reese, assailing manufacturers who called for corrective labor legislation, but are now "circumventing the bill they asked for." He said that one of the best provisions of the law is that which provides that the labor union can be sued for violating a labor agreement.

Instead of passage of the Taft-Hartley bill, which he believes contains at least two clauses which the United States Supreme Court may hold to be unconstitutional, the Wagner law should have been amended, Reese declared. The provisions involve the non-Communist affidavits and the ban on contributions to political candidates.

A talk on pulp factors which influence the design and operation of vacuum washer systems was given by John McPherson, Wausau, of the Mosinee Paper Mills Company. Motion pictures on "Southern Wood Handling" were shown by Mr. Durkee.

A luncheon followed the morning session, and golf was played afterward at the Wausau Country Club. Harold A. Skinner was chairman of the bowling party which was held Friday evening.

Life memberships in the Northwest division of the American Pulp and Paper Superintendents' Association were presented at the banquet and final session September 27 to C. E. Youngchild and L. F. Knickerbocker, Appleton, Wis. The presentations were made by Charles H. Reese, Port Edwards.

Past chairman certificates were presented to R. A. Nugent, Nekoosa, retiring division chairman, and to Lester Smith, Kalamazoo, Mich.

Prizes for bowling were awarded as follows by Harold A. Skinner: Superintendents' high score for three games, Earl Edwards, first; H. A. Skinner, second; Arnold Urban, third; affiliates' high for three games, H. A. Mattson, Chicago, first; H. A. MacDonald, Chicago, second, and L. A. Kuilema, Philadelphia, third, and low for three games, Theodore Deininger, and second low, A. M. Crewson, Cloquet, Minn.

Booster bowling prizes went to B. A. Plank, Appleton; G. E. Golen, Cloquet, Minn.; M. A. Thompson, Chicago; G. A. Hoopes, Green Bay, Wis.; C. A. Harding, Franklin, Ohio; and Harold Norseen, Appleton.

Peter Talbot, Chicago, and Ray Totten, Appleton, were tied for first in golf, low gross; tie for low net, John Nylund, Chicago, and C. W. Larson, Milwaukee; high gross, R. J. Tourangeau, Wausau; nearest to the pin on No. 3 green, Henry Baldwin, Wisconsin Rapids.

Blind bogeys, C. J. McMahon and C. E. Youngchild, Appleton; Jack Lauterbach, Wausau; Harold Chew, Neenah; Joseph Jenkins and A. M. Crewson, Cloquet, Minn.; M. M. Bixby, Wilmington, Del.; and John Zieman, Marinette, Wis.

Professional Group Will Meet October 20

CHICAGO — The Professional Paper Group will hold its next regular monthly meeting on Monday evening, October 20. It is reported that for this meeting, at least, the Group will forego the popular panel form of program to present an outstanding speaker in the trade, now being contacted.

TAPPI Is Invited by Downingtown, Lukens

DOWNINGTOWN, Pa. — Invitations to visit the plants of the Downingtown Manufacturing Company, of this town, and Lukens Steel Co., of Coatesville, will be given all members of the Engineering Section of TAPPI when they register at the Bellevue-Stratford Hotel, Philadelphia, for the meeting on November 3, 4 and 5. The trip will be made on Thursday, November 6, the day following the regular scheduled meetings.

Special chartered buses will leave the hotel at nine in the morning. They will travel about an hour through Philadelphia's famous "Main Line" section and through historic, picturesque Chester County for 30 odd miles.

At Downingtown, visitors will see complete, integrated facilities for the manufacture of paper making machinery, including an engineering department, pattern shop, foundry, machine shop and erecting shop. They will also see suction rolls in various stages of construction, a wall board press part, a cylinder machine vat and press section, and various other units and parts used in the manufacture of paper and board.

Following the plant visit, buses will take the TAPPI to the nearby Coatesville Country Club for luncheon, at which the Downingtown Manufacturing Company and Lukens Steel Company of Coatesville will be joint hosts. In the afternoon, TAPPI members will visit the plant of Lukens Steel Company, then the buses will bring them back to the hotel in Philadelphia, arriving at approximately five in the afternoon.

Veterans Retire From Gilbert Mill Service

MENASHA, Wis. — Two veteran employes of the Gilbert Paper Company retired last week. They are William O. Wege, Neenah, with 47 years of service, and Frank Koslowski, Menasha, with 46 years.

Wege retired as tour foreman. He started working for Gilbert November 15, 1900, starting as a paper machine third hand and being rapidly promoted to back tender, and becoming a machine tender in 1905. He continued in that position until May, 1944, when he was promoted to tour foreman. He is 66 years old.

Koslowski began working for the company on February 18, 1902, as a paper machine third hand and advancing steadily until he became a machine tender in 1916, a position he held until his retirement. He is 65.

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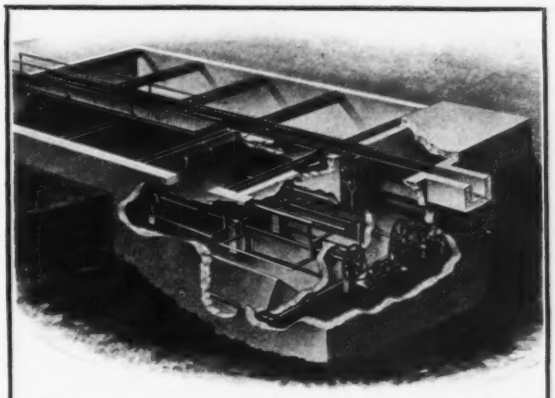

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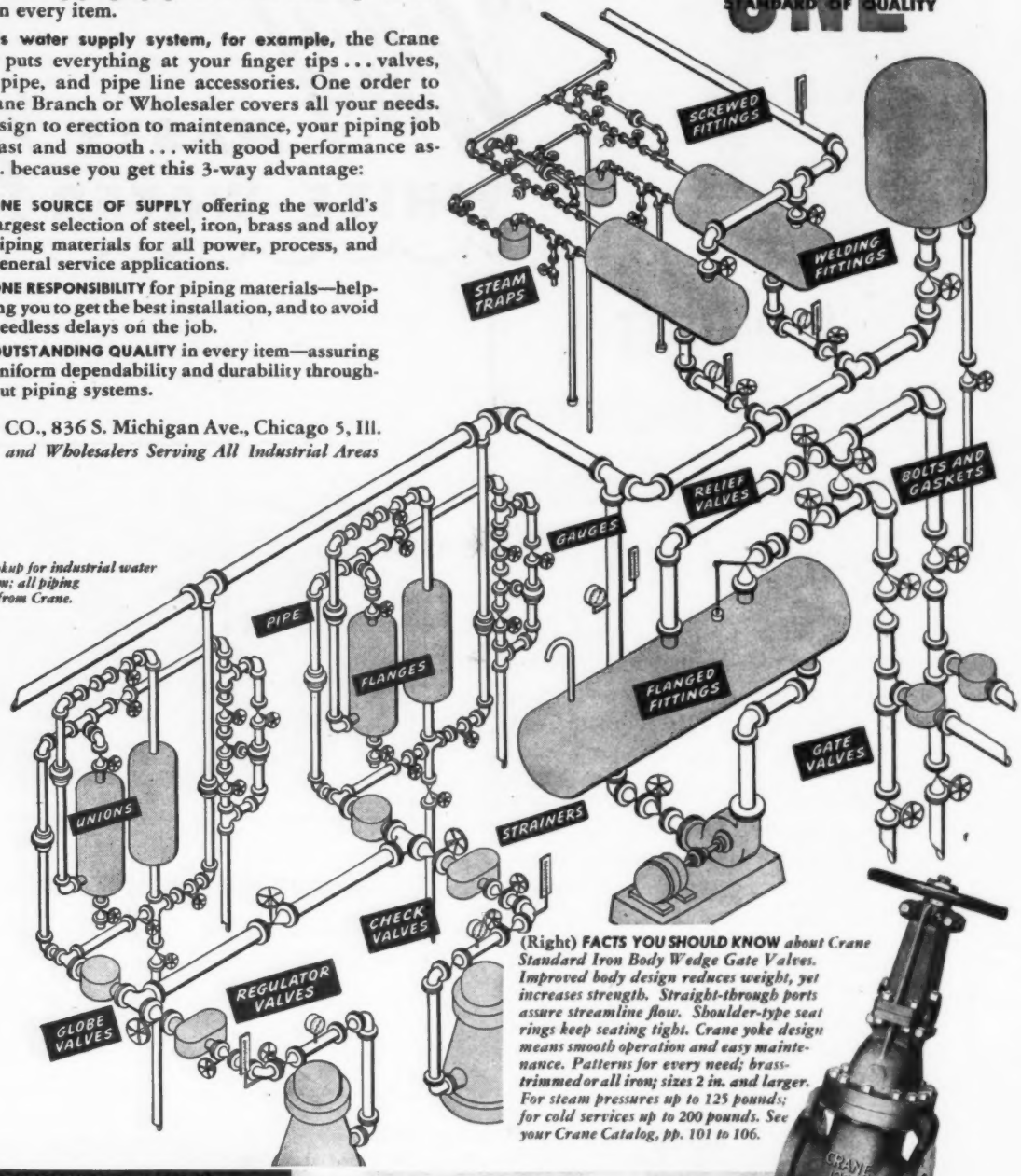

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Gas or Electricity for Infra-Red Drying

By G. R. Van Kampen, Sales Manager, Red-Ray Manufacturing Company, Inc.

The advantages of infra-red drying are widely recognized in industry. Through the use of infra-red, or radiant heat, drying speds have been increased, equipment costs have been reduced and, frequently, the quality of the finished products have been improved. There are two generally accepted sources of this type of heat for industrial drying—infra-red electric lamps and infra-red gas burners. Much confusion exists regarding the use of the lamps and the burners for drying purposes. Each has its place and many factors govern the proper choice.

"Infra-Red" has been so glamorized in recent years that this form of heat is frequently thought to have magic qualities and the ability to accomplish the impossible. It is simply another term for radiant heat — that is — the heat given off in wave form by a hot body. With a lamp the heat is emitted by a glowing filament, with the infra-red gas burner by a glowing refractory.

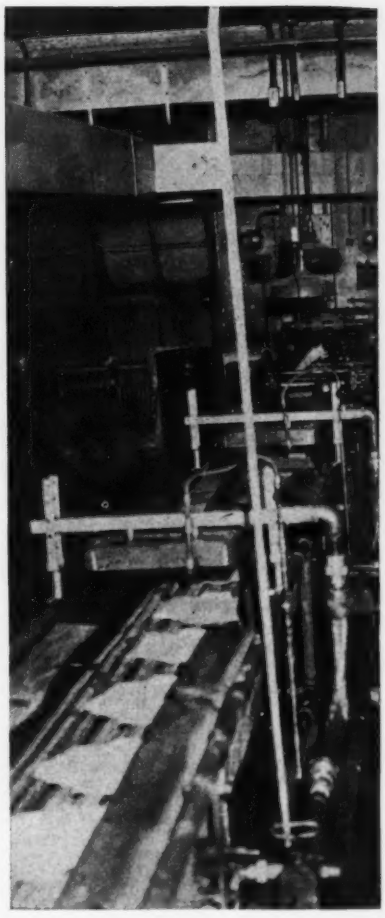
Drying is actually the evaporation of water or other liquid in the material being dried. In the evaporation of each pound of liquid a definite amount of heat is absorbed. Using a standard unit of heat measurement—the British Thermal Unit (B.T.U.), the evaporation of a pound of water at average temperature requires approximately 1100 B.T.U. At a practical efficiency of 50 percent, 2200 B.T.U. or more are required for each pound of water to be evaporated. No miracles can be performed. At least the above amount of heat must be used to accomplish the evaporation mentioned, regardless of the source of heat.

High speed drying or the evaporation of a large amount of liquid within a brief period of time necessitates the rapid transfer of heat from the heat source to the liquid.

To take a concrete example—assume that a continuous roll of cloth or paper is to be dried and that each 100 linear feet contains 20 pounds of water. If the material travels at the rate of 50 feet per minute, 600 pounds of water per hour must be removed. At the rate of 2200 B.T.U. per pound of water, 1,320,000 B.T.U. would be necessary for the above operation.

A kilowatt is equivalent to 3414 B.T.U. Therefore, this amount of heat would equal 396 KW. If 250 watt lamps were used, 1544 lamps would be required to deliver the necessary amount of heat. Using 500 watt lamps, 772 would be required. On the other hand, infra-red gas burners can be operated at 7000 B.T.U. per hour per inch of burner. Therefore, 189 inches of burner would have the desired capacity. This could be furnished in various burner lengths. Three 63 inch burners would give exactly the 189 inches. Or, if material 70 inches in width were to be dried, three 70 inch burners could be operated at slightly under rated capacity.

The comparison is made to indicate the importance of choosing equipment which can be installed in available space and which has adequate heat capacity.



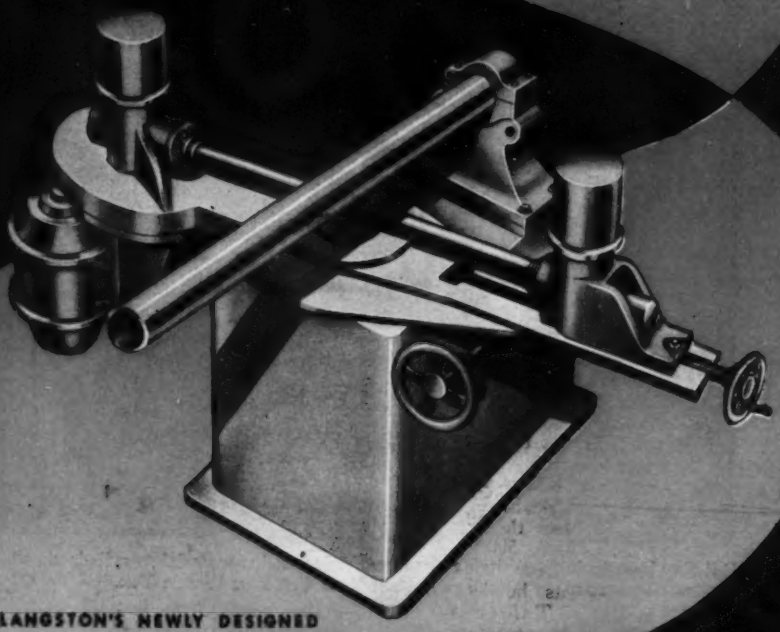
Red Ray inverted drying gum on paper stock. Photo courtesy of Frank P. Carlson, Inc., New York

Source of Heat	Rate per 1000 cu. ft. of gas	Cost per 100,000 B.T.U. (one therm)	Cost per 1000 lb. water evaporated (@ 50% efficiency)
Manufactured Gas	$.40	$.075	$1.65
(approximately 535 B.T.U.	.50	.093	2.05
per cu. ft.)	.60	.113	2.45
	.70	.131	2.86
	.80	.149	3.29
Natural Gas	.12	.011	.25
(approximately 1050 B.T.U.	.15	.014	.313
per cu. ft.)	.20	.019	.418
	.30	.028	.61
	.50	.048	1.04
	.75	.071	1.37
	1.00	.095	2.10
	Rate per one pound		
Butane or Propane Gas	.0125	.0581	1.27
(approximately 21,500 B.T.U.	.015	.0697	1.53
per lb.)	.02	.09	2.03
	.04	.18	4.08
	.06	.28	6.11
	.08	.37	9.16
	Rate per KW		
Electricity	.005	.146	3.21
(3414 B.T.U. per KW)	.01	.293	6.43
	.015	.439	9.65

An attempt to accomplish a drying operation with less than the necessary amount of heat can only result in disappointment. In cases where limited quantities of solvent are to be removed a reasonable number of infra-red lamps offers a practical solution to the problem. Many paint and lacquer drying jobs are in this class.

Remember that there is just so much potential heat per kilowatt of electricity or per cubic foot of gas. No existing method can produce more heat. Further, no lamp or burner can transform other forms of energy to heat and transfer this heat to the material being dried without some losses. About 50 percent overall efficiency may be considered good on an open job. Within enclosures somewhat beter efficiency may be obtained, due to reflecting surfaces and conservation of convected heat in the form of heated air and products of combustion.

It is important to accurately determine the amount of liquid to be removed. When the pounds or gallons



LANGSTON'S NEWLY DESIGNED
SINGLE BELT TUBE WINDER

LANGSTON

TUBE WINDING EQUIPMENT

THIS MACHINE, NOW IN PRODUCTION, IS GREATLY SIMPLIFIED BY USING A VARIABLE SPEED MOTOR. WELDED BEDPLATE PERMITS CONVERSION AT ANY TIME, INTO A DOUBLE BELT UNIT. BOTH THE SINGLE AND DOUBLE BELT HAVE A GREATER RANGE IN DIAMETER FROM ¼" UP TO 13". FOR HIGH SPEED MACHINES, WHICH AUTOMATICALLY PRODUCE ACCURATELY CUT, UNIFORMLY WOUND TUBES – SPECIFY *LANGSTON*. DELIVERIES ARE BETTER THAN YOU THINK. SAMUEL M. LANGSTON COMPANY, CAMDEN, NEW JERSEY.

A CLEAN CUT · A SHEAR CUT

of liquid are known, it is a simple matter to compute the B.T.U. requirements. At least 2200 B.T.U., or to be very conservative, 2500 B.T.U., should be figured for each pound of liquid.

The following should be given careful consideration:

Heat output of the equipment to be used.

Space required for the equipment.

Maintenance.

Cost of installation including cost of gas line of proper size or electric lines to handle the estimated load.

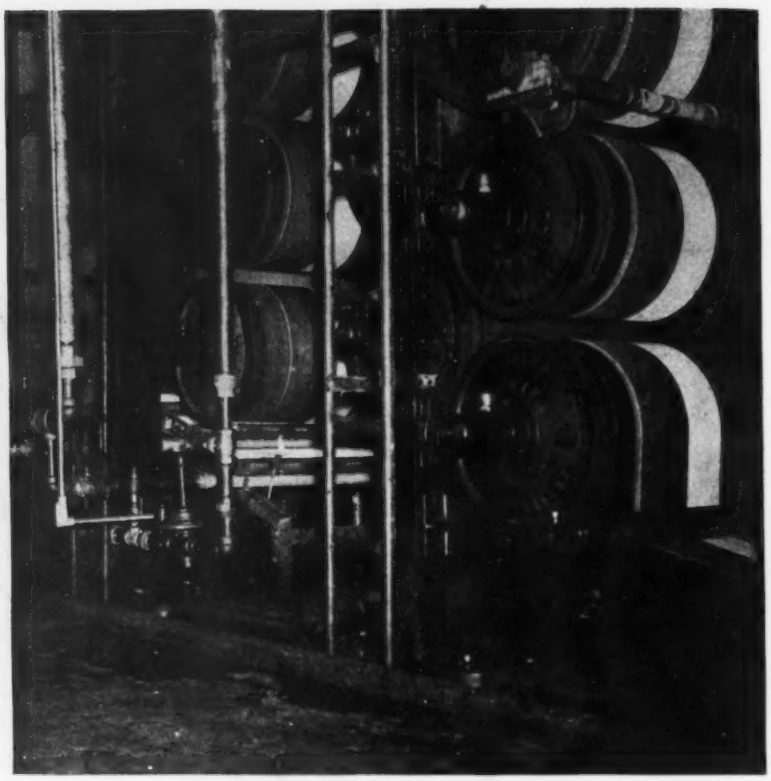
The chart gives costs per 100,000 B.T.U. and per thousand pounds of water evaporated with electricity and with the three most common types of gas, at various rates for each. All figures are based on an efficiency of approximately 50 percent.

In considering the operating cost of infra-red equipment, either electric or gas, it should be remembered that cost is incurred only when the equipment is actually in operation. The heat is turned on and off instantly.

Initial cost is a further factor favoring the use of infra-red for drying. The cost of adequate equipment is usually a small portion of that for other equipment offering equal drying speed.

Infra-red drying is giving unusual production increases and economies in thousands of plants in varied industries. It is a readily available and economical solution to many drying problems.

Just don't expect the impossible.



Red Ray burners increase drying speed and reduce sizing material to cylinders. Photo courtesy American Asphalt Roof Co., Fort Worth, Tex.

Nekoosa-Edwards Tests Tree-Planting Machines

NEKOOSA, Wis.—More than 100 persons, including representatives of four paper companies, watched a tree-planting demonstration September 30 on lands owned by the Nekoosa-Edwards Paper Company near here.

Two newly designed tree-planting machines were shown in action, in the exhibition sponsored jointly by Nepco and the University of Wisconsin College of Agriculture. One of the machines was built from a design developed at the university, the other by a commercial company.

F. B. Trenk, university extension forester, said that the percentage of survival and the rate of growth for machine-planted trees is greater than for those planted by hand.

Representatives were present from Consolidated Water Power and Paper Company, Northern Paper Mills, Mosinee Paper Company and Nekoosa-Edwards Paper Company, from the Patton Logging Company, Emasa, Mich., and federal, state and county conservation agencies.

Eastwood Neally Celebrates Triple Anniversaries

BELLEVILLE, N. J.—Eastwood Neally Corporation, of 28 Joralemon Street, will celebrate three anniversaries at a dinner at the Waldorf-Astoria Hotel in New York, Ocober 16.

The company is celebrating the 100th anniversary of its founding by the late John Eastwood; the 70th anniversary since it began production of paper mill wire and the 50th anniversary of President Calvin H. Neally's association with the concern.

Kinsley De-Inking Method To Be Offered for License

CLEVELAND, Ohio—De-inking is now being done without the use of heavy alkalies by a patent method developed by C. R. Timlowski, technical director of The Kinsley Chemical Company. The system is applicable to equipment now in the mills and the ease and simplicity of the operation is such that it does not require special technical skill for its operation.

The pH level is automatically controlled throughout the cook without the need of additional chemicals being introduced either by instrument or manually. The results are said to be comparable to straight caustic de-inking but the ink speck count is decreased by the automatic chemical pH control.

One paper mill suffering from lack of caustic soda adopted the system and reports the results as excellent at no increase in chemical costs.

The Kinsley Chemical Company expects to begin licensing mills for use of this system.

Philadelphia Quartz Appoints A. C. Pierce

PHILADELPHIA — The Philadelphia Quartz Company has added Albert C. Pierce to its sales staff. Mr. Pierce is soon to assume territorial duties in the metropolitan New York area.

He has been a resident of Philadelphia for many years, having received his Bachelor's Degree in Geology from the University of Pennsylvania in 1939. Following this, he was employed as a graduate assistant at Rutgers University for a year before World War II.

Mr. Pierce joined the Philadelphia Quartz Company in August of this year and has completed technical training in the uses of Silicates of Soda in Industry. Everett W. Turley, previously sales representative in the New York area, has been transferred to Chicago.

Ross Boston Office Celebrates Anniversary

BOSTON — The entire staff of the Boston office of J. O. Ross Engineering Corporation, headed by F. W. Partsch, vice-president, recently enjoyed a gala party on the occasion of the third anniversary of the opening of the New England office. Since this office was opened in 1944 it has been necessary to expand the original space and staff to handle the increasing number of installations of Ross systems throughout New England.

STOP corrosion losses

WITH STAINLESS STEEL

LESS than twenty years ago the equipment and materials used in the sulfite pulping process required frequent replacement at considerable cost. Corrosion was to blame. Stainless Steel has changed the picture.

Today, Stainless Steel, properly selected to meet the corrosive conditions encountered, not only has reduced equipment deterioration resulting from corrosive attack but by safeguarding the product from harmful contamination has acted to ensure a higher quality, more useable product. This is especially true of fine papers, and with pulp to be used in rayon manufacture where specifications are close as to metal content.

In sulfite digesting equipment, in vacuum stills, heat exchangers and pipes and fittings handling hot sulfite liquors, Stainless Steel has definitely proved its economic superiority. It far outlasts the less effective materials formerly used—reduces unexpected and unnecessary shutdowns—practically eliminates the wastes caused by corrosion, contamination and discoloration.

U·S·S Stainless Steel—a perfected, service-tested Stainless—has long been used by leading makers for improving the performance and extending the life of pulp and paper mill equipment. But some grades are better suited than others for such applications. For that reason we suggest that you talk over your problems with our representatives. These men know what Stainless Steel can do. They will gladly advise you what analyses will give you best results, show you how to use U·S·S Stainless most efficiently. They'll also tell you when not to use it, if its use is not economically justified.

U·S·S STAINLESS STEEL

USS STAINLESS STEEL — UNITED STATES STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

7-984

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY (Warehouse Distributors), Chicago · UNITED STATES STEEL EXPORT COMPANY, New York

IMPORTS

NEW YORK IMPORTS

WEEK ENDING OCTOBER 4, 1947

SUMMARY

Newsprint	27,830 rolls
Coated Paper	60 cs.
Filter Paper	22 cs.
Tracing Cloth	25 cs.
Drawing Paper	2 cs.
Wrapping Paper	2 cs., 38 bls., 436 rolls
Paperhangings	1 ble., 5 cs.
Sulphite Paper	229 rolls
Kraft Paper	306 rolls
Photo Base Paper	50 cs.
Tissue Paper	140 cs.
Paper Serviettes	4 pkgs.
Parchment Paper	2 cs.
Paper Bags	36 bags
Miscellaneous Paper	153 rolls

NEWSPRINT

The Paper Clearing House, Inc., Midland Victory, Antwerp, 262 rolls.

N. Y. Evening Journal, Markland, Liverpool, N. S., 730 rolls.

N. Y. Tribune, Markland, Liverpool, N. S., 1718 rolls.

N. Y. World Telegram, Markland, Liverpool, N. S., 435 rolls.

Brooklyn Eagle, Markland, Liverpool, N. S., 726 rolls.

Washington Post, (Alexandria, Va.), Markland, Liverpool, N. S., 2597 rolls.

Alexandria Gazette, (Alexandria, Va.), Markland, Liverpool, N. S., 27 rolls.

Washington Daily News, (Alexandria, Va.), Markland, Liverpool, N. S., 236 rolls.

N. Y. World Telegram, Stuart Prince, Cornerbrook, 220 rolls.

N. Y. Sun, Stuart Prince, Cornerbrook, 926 rolls.

Clinton Paper Corp., Stuart Prince, Cornerbrook, 1294 rolls.

Hattiesburg American, Stuart Prince, Cornerbrook, 93 rolls.

Pensacola News & Journal, Stuart Prince, Cornerbrook, 161 rolls.

News Syndicate Co., Charles Nordhoff, Baie Comeau, 5965 rolls.

H. G. Craig Co., Donpaco, Donnacona, 3537 rolls.

Malmar Paper Co., West Linn Victory, Antwerp, 101 rolls.

News Syndicate Co., Colabee, Baie Comeau, 7407 rolls.

R. A. Olsen Co., G.T.D., Donnacona, 369 rolls.

News Syndicate Co., International No. 1, Gatineau, 305 rolls.

R. A. Olsen Co., Newscarrier, Donnacona, 384 rolls.

H. G. Craig Co., Kermic, Donnacona, 337 rolls.

COATED PAPER

F. P. Gaskell & Co., Elysia, Glasgow, 60 cs. (for ciragette tipping).

FILTER PAPER

R. F. Downing & Co., Barnard Victory, London, 1 cs.

H. Reeve Angel & Co., Inc., Barnard Victory, London, 21 cs.

TRACING CLOTH

Keuffel & Esser Co., American Traveler, Manchester, 25 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., Barnard Victory, London, 2 cs.

WRAPPING PAPER

National City Bank, Gripsholm, Gothenburg, 436 rolls.

Public National Bank Trust Co., Gripsholm, Gothenburg, 38 bls.

Sandvik Steels, Inc., Gripsholm, Gothenburg, 2 cs.

PAPERHANGINGS

W. H. S. Lloyd & Co., Barnard Victory, London, 5 cs., 1 bls.

SULPHITE PAPER

Resolute Paper Products Corp., Gripsholm, Gothenburg, 229 rolls.

KRAFT PAPER

Inter-State Cordage & Paper Co., Gripsholm, Gothenburg, 190 rolls.

Richard Bauer & Co., Gripsholm, Gothenburg, 116 rolls.

PHOTO BASE PAPER

Lep Transport, Inc., Barnard Victory, London, 50 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., American Clipper, Liverpool, 140 cs. (gauze stereotyping).

PAPER SERVIETTES

(———), Mauretania, Southampton, 4 pkgs.

PARCHMENT PAPER

George Lippelgoes, Blommersdyk, Antwerp, 2 cs.

PAPER BAGS

N. H. Weitzner, Bienville, Antwerp, 36 bags (empty).

MISCELLANEOUS PAPER

Bank of The Manhattan Co., Gripsholm, Gothenburg, 124 rolls.

Manufacturers Trust Co., Gripsholm, Gothenburg, 29 rolls.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Midland Victory, Antwerp, 65 bls. old waste bagging.

Darmstadt Scott & Courtney, Midland Victory, Antwerp, 55 bls. old waste bagging.

(———), Horseshoe Splice, Vera Cruz, 38 bls. wool rags.

Royal Manufacturing Co., Robert Maersk, Antwerp, 210 bls. cotton waste.

Riverside Mills, Robert Maersk, Antwerp, 108 bls. cotton waste.

Price & Pierce, Ltd., Markland, Liverpool, N. S., 415 rolls paper waste.

Great Eastern Packing & Paperstock Corp., Stuart Prince, Cornerbrook, 261 bls. unbleached waste wrappers.

Brandwein Mazur Co., Macalester Victory, Bombay, 150 bls. cotton waste.

W. J. Green Co., Inc., Executor, Alexandria, 130 bls. flaxwaste.

Continental Bank Trust Co., Executor, Alexandria, 80 bls. scrap bagging.

Manufacturers Trust Co., Executor, Genoa, 54 bls. old waste bagging.

Chase National Bank, American Clipper, Manchester, 15 bls. wool rags.

(———), American Clipper, Manchester, 12 bls. wool rags.

OLD ROPE

W. Steck & Co., Martand, Calcutta, 25 bls. (hemp rope cuttings).

R. L. Pritchard Co., Martand, Calcutta, 35 bls. (hemp rope cuttings).

CHINA CLAY

R. T. French, Sacramento, Hull, 20 bags.

GLUESTOCK

H. Remis, Mormacgulf, Rio de Janiero, 394 bags.

CASEIN

Casein Co. of America, Div. of The Borden Co., Binghampton Victory, Buenos Aires, 4000 bags (ground lactic).

Intermaritime Forwarding Co., Mormacgulf, Buenos Aires, 406 bags (lactic).

WOODPULP

Price & Pierce, Ltd., Markland, Liverpool, N. S., 1062 bls. unbleached sulphite pulp.

Acer & Co., Stuart Prince, Cornerbrook, 300 bls. sulphite pulp.

Parsons & Whittemore, Inc., Gripsholm, Gothenburg, 282 bls. dry bleached sulphite pulp.

BALTIMORE IMPORTS

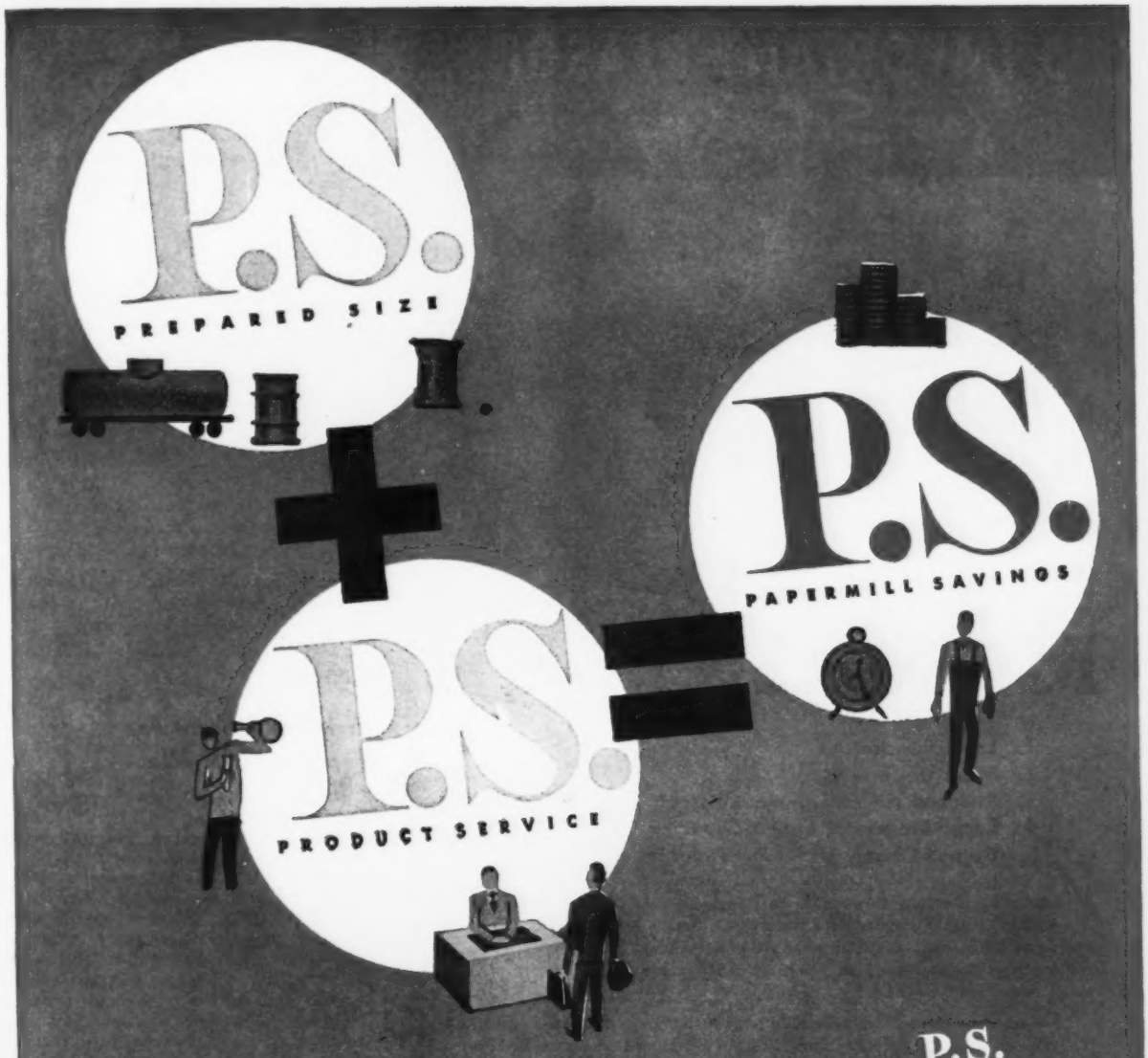
WEEK ENDING OCTOBER 4, 1947

American Cyanamid & Chemical Co., Mormacwren, Buenos Aires, 2000 bags ground lactic casein.

NORFOLK IMPORTS

WEEK ENDING OCTOBER 4, 1947

E. J. Keller Co., Inc., Midland Victory, Antwerp, 43 bls. old waste bagging.



HERE'S A FORMULA every papermaker should know—*one that paper and board mills everywhere have used profitably for years!*

Hercules, as a major producer of gum and wood rosin, has access to the basic raw materials for the finest Prepared Sizes. Careful control over the production and processing of these raw materials assures the papermaker of consistently uniform sizes designed to meet his most exacting needs. Hercules' Product Service is the *plus* offered through Hercules' service representatives—men who *know* papermaking.

Together, Hercules Prepared Size and Product Service add up to Papermill Savings in time, trouble, money, and labor.

P.S.
Hercules Prepared Sizes include:

ROSIN SIZES
(*dry, paste, or emulsion; light or dark grades*)

ROSIN WAX SIZES
(*dry, paste, or emulsion; light or dark grades*)

WAX EMULSIONS
(*Paracols®*)

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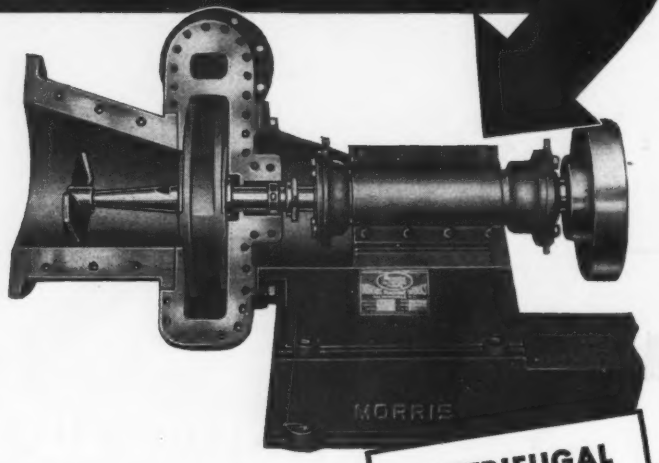
SIZING MATERIALS AND CHEMICALS FOR PAPER

HERCULES POWDER COMPANY
962 King Street, Wilmington 99, Delaware

®Reg. U. S. Pat. Off. for Hercules Powder Company

5 IMPORTANT REASONS *for Selecting . . .*



MORRIS CENTRIFUGAL STOCK PUMPS

1. **Less Dehydration**
2. **More Uniform Flow**
3. **Reduced Air-Entrainment Losses**
4. **Large Reserve of Excess Capacity**
5. **Output Closely Constant Under Varying Heads**

✓ Producing a steady flow, with no clogging or air binding, the Morris Type ST-P Stock Pump delivers more stock over a longer period at lower cost, and with fewer shut-downs and replacements. That's due to proved reliability of design, based on extensive experience in handling pulp of all kinds in various types of mills.

The suction opening is of unusually large diameter for the rated capacity. The suction nozzle is specially shaped and proportioned so that very heavy pulp can be drawn into the impeller without restricting the flow or creating extensive friction losses.

Notice the bottom of the suction nozzle. It is horizontal—flush with the eye of the impeller. No upward incline or step to encourage dehydration. Notice the bronze suction booster that mechanically agitates and propels the fibre into the suction eye, avoiding extraction of water and consequent clogging of the suction pipe with dehydrated stock. Notice the horizontal top discharge nozzle for more rapid expulsion of air, and the deep stuffing box that insures long packing life.

● Efficient on clean Sulphite or Kraft stock, as well as on waste paper or rag stock because of its non-clogging and non-binding characteristics. Write today for Bulletin 176.

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MORRIS CENTRIFUGAL PUMPS

New Booklet Describes Ion Exchange Resins

PHILADELPHIA — The role of the Amberlites, ion exchange resins, in water treatment and chemical processing, is the subject of a new booklet prepared by the Resinous Products & Chemical Company, W. Washington Square, manufacturers of these synthetic resins which have made possible considerable simplification and time-saving in these fields. Based on a highly successful current series of informative, factual advertisements, the booklet deals with the contributions made by the Amberlites in the transportation, chemical, canning, bottling, ice, paper, textile, dye and pigment industries.

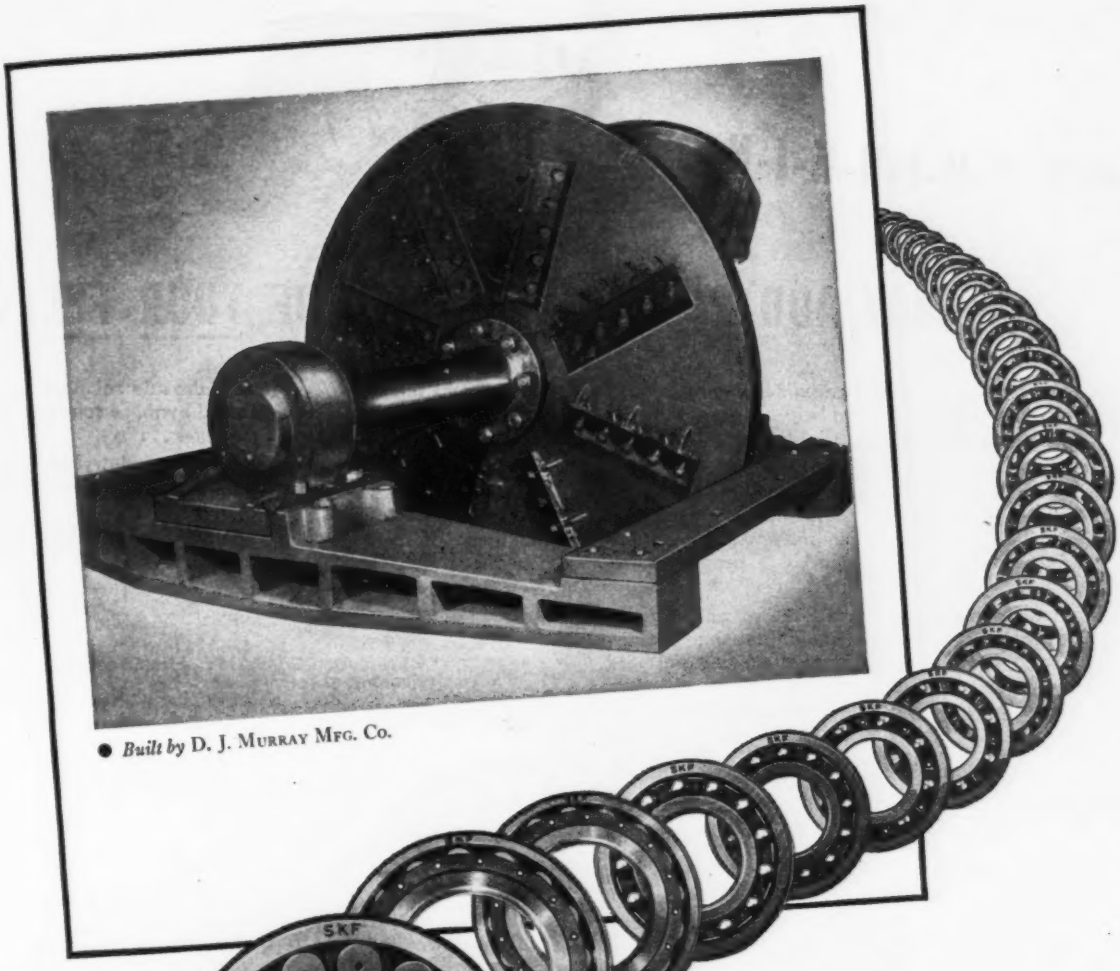
Processes described include deionization of locomotive water, isolation of rare earth metal salts, control of alkalinity, concentration of chemical elements, recovery of acids, prevention of scale in heat transfer processes, liberation of weak bases and adjustment of salt content.

Thermal Problems Are Featured in New Book

PHILADELPHIA—A new 16-page publication has been released by Cochrane Corporation describing five different flash-tank and heat-exchanger systems for recovering the otherwise wasted heat in boiler blowoff water. The flash principle permits regeneration of low pressure steam for feedwater or plant heating. Remaining heat in the concentrated blowoff water is transferred to incoming feedwater through a heat exchanger. Multiple tanks may be used for flashing of steam at different pressures. Two pages are devoted to describing the detailed calculation of savings under actual plant conditions; a quick-estimating chart is provided for quick calculations of dollar-savings possible together with a roughly estimated cost of equipment. Two thermostatically controlled systems are described for automatically proportioning the rate of blowoff to makeup water. Four pages list users from 38 states interspersed with typical dollar savings case histories due to the recovery of heat and low-pressure steam.

Pennock Joins Moore & White As Executive Engineer

PHILADELPHIA — George M. Pennock, one of the country's top experts on paper-making machinery, has been appointed executive engineer for The Moore & White Company. He was formerly chief engineer for Bagley & Sewall, Watertown, N. Y., being associated with that paper machinery manufacturer for 31 years.



● *Built by* D. J. Murray Mfg. Co.

BEARINGS THAT TAKE IT ON MURRAY CHIPPERS

It's asking a lot for bearings on a chipper to take heavy shock loads at relatively high speeds day after day, year after year. That's why SKF Spherical Roller Bearings are preferred. Sturdy construction enables them to absorb heavy loads continuously. Their rolling alignment prevents internal binding. Their smooth-running characteristics mean reduced power consumption. Their lubrication requirements are few and far between. If you want to assure the steady, economical production of uniform chips for uniform pulp, make sure SKF Bearings are on the next chipper you build or use. 6335

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

"JUST T-H-I-N-K-I-N-G"

MAY ADD 20% TO THE LIFE OF YOUR FELTS

Just think of a product . . . a *new* and *different* product . . . a product so outstanding that it can help . . .

. . . increase your daily production of paper or paper board . . . give you greater output per felt . . . assure longer runs between shutdowns for cleaning up. Unbelievable as it seems, actual mill experience has proved that wet felts can be "soured" *without shutting off the stock* when a small amount of this remarkable product is incorporated in the acid wash.

The product we ask you to think about . . . and *suggest you try* . . . is a felt-scouring compound that mixes readily with warm or cold water . . . produces a copious and persistent lather with marked detergent and wetting properties . . . one wholly void of inorganic salts which rinses out freely and completely, carrying off accumulated foreign matter, leaving the felt thoroughly cleaned, softer, more absorbent.

. . . 2% of this product is dispersible and stable in 5% sulfuric acid and in 4% sodium hydroxide solutions . . . further its detergency is not impaired by these solutions or by other alkaline or dilute acid mediums . . .

This product is worth thinking about—and trying—because your felt life can be prolonged up to 20%—a truly worth-while lease on felt life!

The name of this new and different felt-scouring compound is . . . SYNTERGENT*K

Complete working sample and technical bulletin are available on request. Write today.

NOPCO CHEMICAL COMPANY, Harrison, N. J.
(Formerly National Oil Products Company)
BRANCHES: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CALIF.
An affiliate of the American Pulp and Paper Mill Superintendents Association

EVOLVED THROUGH RESEARCH NOPCO

*Reg. U.S. Pat. Off.

SYNTERGENT K

NEW, IMPROVED FELT-SCOURING COMPOUND

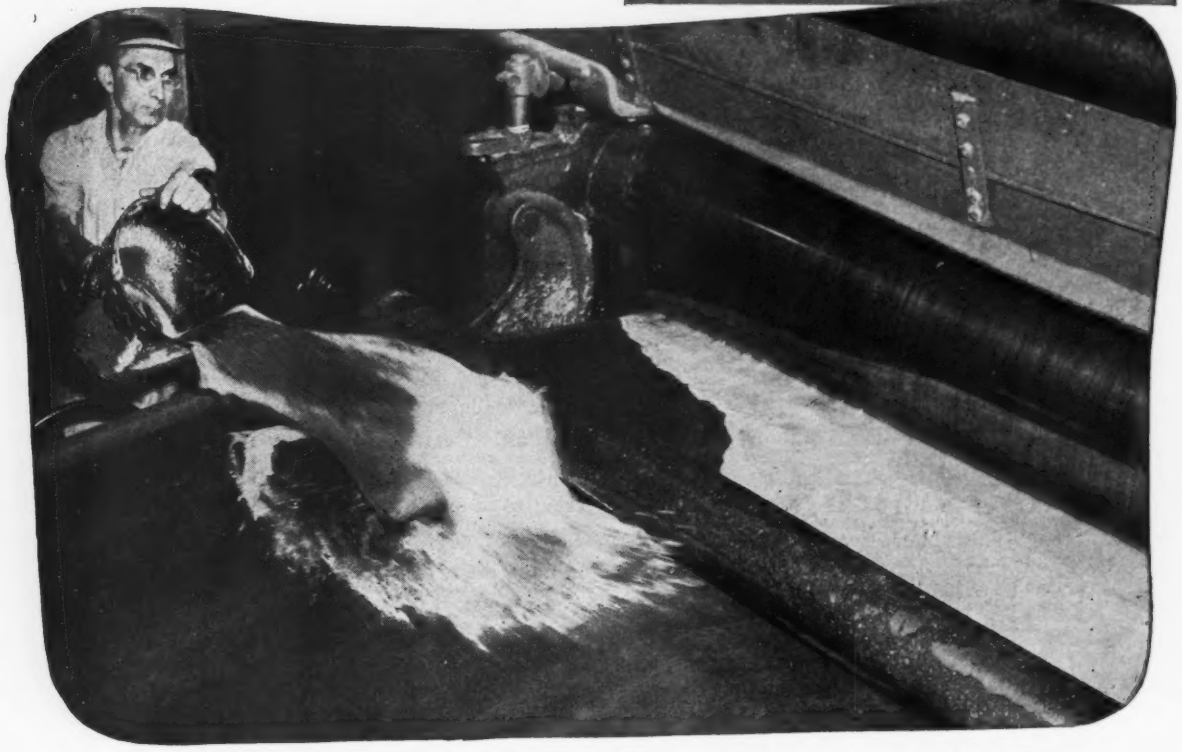


Photo Courtesy of Whippany Paperboard Company, Whippany, N. J., April 27, 1947

AUTOMATIC FORK TRUCK

DEPENDABLE POWER

EXIDE-IRONCLAD POWER AND BATTERY ELECTRIC TRUCKS

They're saving time and cutting costs on materials handling jobs like yours

More and more companies, with operating conditions that closely parallel yours, have discovered the way to faster, safer and more economical handling of materials. They have given the job of lifting, hauling and stacking to the efficient battery electric truck and equally efficient Exide-Ironclad Batteries.

The high electrical efficiency of Exide-Ironclad Batteries is due largely to the unique construction of the positive plates. Each of these plates consists of a series of slotted, hollow tubes which contain the active material. So fine are these slots that, while they permit easy access of the electrolyte, they prevent the active material from readily washing out. Not only does this add to life of plates . . . and battery . . . it also provides higher power ability and capacity, assuring dependable, day long performance with maximum safety and minimum maintenance.

Write us for a FREE copy of Exide-Ironclad Topics, which contains "Case Studies" of materials handling problems. It tells how to cut handling costs up to 50% . . . covers latest developments in handling materials from receiving to shipping.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

AUTOMATIC TRANSPORTER

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, October 8, 1947.

Though production continues well in advance of 1946 records, and overseas shipments remain at high levels, no slackening appears in the demand for the finished product nor any easing in the supply of wood pulp.

The week's news from all sources highlights wood pulp. Fourth quarter quotations from Sweden show increases from $25 to $40 on all grades, accompanied by discomfiting news that production will be curtailed by water shortages following a very dry season. . . . Extensive plans are being projected to lift the output in our Northwest. Lack of equipment to complete kraft mills under construction in the south and east will result in their diversion into wood pulp — for integrated mills. Which of course offers no relief for the small non-integrated mill for whom the Scandinavian curtailment is a special blow, with worse expected in 1948 when Swedish and Finnish outputs may largely be confined to relieve acute shortages in Europe.

Waste paper, paralleling the paper market, is very firm with prices up on several grades and collections still slow, particularly on kraft and corrugated varieties.

Kraft of all kinds continues very scarce with the mills meeting approximately 55 percent of the demand for all types of wrapping paper. This condition chiefly is an outgrowth of the war's demand for multi-wall bags for military use, as well as to the increased operating problems and costs of producing wrapping paper. The net result leaves about one-sixth of the kraft manufacturers now producing proportionate amounts of wrapping paper and the balance exclusively devoted to the processing of sacks and multiwalls.

The Department of Commerce reports paper and board production in August 140,000 tons greater than the output of July, a total of 1,765,206 tons, also that the largest rise in domestic pulpwood for August came from the Pacific Northwest.

The index of general business activity for the week ended September 27 inclined to 142.3 from 141.4 in the preceding week, compared with 133.8 in the corresponding week of 1946. The index of paperboard rose to 166.7 from 165.9 in the preceding week, compared with 155.3 for the corresponding week of 1946.

Paper production for the week ended September 27 was estimated at 107.0 percent compared with 108.6 (revised figure) for the preceding week, with 106.6 for the corresponding week in 1946, with 98.1 for 1945, and with 93.5 percent for the corresponding week of 1944.

Paperboard production for the week ended September 28 was 102.0 percent of capacity, compared with 101.0 percent for the preceding week, with 101.0 percent for the corresponding week in 1946, with 96.0 for 1945, and with 95.0 for the corresponding week of 1944.

Woodpulp

News of Sweden's curtailed shipments comes earlier than had been expected. It had been expected that the flow of Scandinavian pulp would not be maintained because of their own demand and short supply, their use of wood to replace coal as fuel, the reduced cut of pulpwood in order to sustain overcut forests, as well as the high market for paper products in their own countries. With Europe's mills partially paralyzed by lack of coal, chemicals and pulpwood, and paper shortages in Latin America, Australia, India, China and Japan, with the possibilities of drawing pulpwood from Russia and India an unknown factor, and operation Alaska a doubtful project because of costs, it is recognized that the world-wide pulp shortages are likely to continue for several years unless science makes available other sources.

Waste Paper

In most respects the market is steady with ledgers, hard white envelope and hard white shavings up $25 to $30 per ton. New manila envelope cuttings are seldom seen, and grading of new 100 percent kraft corrugated cuttings is so confused that we are removing the listing. . . . Book stocks continue to hold. . . . Kraft grades are strong. . . . No. 1 news has eased a little. . . . Chicago and Boston report collections goods and the flow from local rural areas is being maintained. Urban sections will require organization to stimulate collections if inventories are to be replaced. The Eastern Conservation Committee states that news must be bundled securely and other waste well packed and tied. . . . Proposed increases in freight rates should spur collections to save money in freight charges, thus relieving the Eastern market where the supply falls so far short of demand.

Would Free Financing To Foreign Newsprint Mills

WASHINGTON — Senator Alexander Wiley, Republican, of Wisconsin, has suggested to the Export-Import Bank that it extend ample credit to foreign producers of newsprint.

Senator Wiley, in a letter to the bank's chairman, William McChesney Martin, proposed that the bank "bear very closely in mind the vital factor of promoting newsprint production abroad, and in particular, newsprint export to the United States."

The Senator stated that the Department of Commerce foresees no substantial increase of newsprint until 1949 or 1950. He added that the production constitutes very bad news to American journalism, and particularly to smaller newspapers.

Midwest Waste Prices Continuing Strong

CHICAGO—At this writing, the waste paper trade in the area is waiting for the posting of the October price lists of the mills in the hope that the current confusion over old corrugated paper will be abated. With old corrugated reported in active demand, trade sources here continued to quote in a range of $30 to $34 a ton. Some mills were buying actively at $34, it was reported, while others were said to be well supplied with materials and were offering only $30. Other waste paper items were reported steady with mills paying $15 a ton for No. 1 mixed and $18 to $20 for No. 1 news. Strong demand from roofing manufacturers was reported here and cardboard makers were also said to be heavily in the market, all of which combined to stimulate the mixed paper market. News was also reported to be active and steady.

The undertone in the general paper lines was reported to be continued strong with some prospects of certain prices spiraling through current levels as operating costs and costs of raw materials continued to rise. Reports here indicate that the trade believes America will pledge itself to a huge program of sending billions of dollars worth of capital goods to Europe within the next three or four years and that this fact, alone, will preclude any other than higher prices for some time to come.

Paper mills posted their October price lists for waste paper yesterday, but a differential of $4 a ton remained in the quotations on No. 1 old corrugated which has been in firm demand recently.

A top of $34 a ton was quoted for old corrugated, but trade sources said some mills were offering as little as $30. Meanwhile the other leading grades were unchanged from September at $18 to $20 a ton for No. 1 news and $15 a ton for No. 1 mixed.

LOOKING FOR WAYS to improve your product and save money? Below are 14 improvements in paper and paper processing possible with Celite . . . 14 ways this unique filler helps mill men turn out better products—often at lower costs.

14 WAYS

TO IMPROVE PAPER AND ITS PROCESSING WITH CELITE*

PRODUCT IMPROVEMENTS	PROCESSING IMPROVEMENTS
Increased bulk	Control of pitch trouble
Higher brightness	Recovery of asphalt scrap
Better opacity	Improved formation
Greater absorption	Faster drainage
Improved ink receptivity	Less drying load
Greater smoothness	Increased production
Less gloss	Better retention

Most of these improvements require only a very small percentage of Celite. And its cost is often substantially recovered through reduced shutdown time—a better quality sheet—greater tonnage of paper produced (due to higher retention and faster machine speeds)—economies in steam consumption or other benefits.

Check the properties of Celite listed below and you will see why such improvements are possible. A Celite engineer will be glad to discuss the application of Celite to your particular needs. Write Johns-Manville, Box 290, New York 16, N. Y. for details.

Properties of Celite Fillers and Extender Pigments

	Celite 305	Celite 321	Celite 388	Celite 294
COLOR	LIGHT GRAY	LIGHT GRAY	WHITE	WHITE
Average Brightness (TAPPI Method T452 m-45)	69	59	90	89
Screen Residue, Percent Retained on 325 Mesh (Max.)	1.0	8.0	3.0	15.0
Particle Size (Sedimentation Method) Predominant Range (Microns)	4-0	8-1	10-2	20-4
Absorption *(Water)	210	215	160	195
*(Linseed Oil)	185	205	140	170
True Specific Gravity	2.00	2.00	2.30	2.30
Percent Moisture (Maximum)	6	6	1	1

*lb. of liquid per 100 lb. of Celite (Gardner-Coleman)

APPEARANCE . . . . . Uniform, fluffy powder
STRUCTURE . . Amorphous diatomic particles
PARTICLE SHAPE . . Fine hollow disc, needle and multi-shaped particles
POROSITY . . . 85% to 95%

DISPERSION . . . Wets readily; disperses quickly
SUSPENSION . . . Excellent
ADSORPTION . . . . No appreciable adsorption of color or dye

REFRACTIVE INDEX . . 1.45 to 1.49
COMPOSITION . . Amorphous or opaline silica
BULKING VALUE . . . . Very high (wet) bulk per lb.
REACTIVITY . . . Inert.

JM PRODUCTS

Johns-Manville

CELITE PRODUCTS *for the paper industry*

*Reg. U. S. Pat. Off.

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$87.50	to	$90.00
Sheets	$109.00	"	—

Kraft—per cwt.—Carload Quantities

Zone A, Delivered
40 lb. base weight

Superstandard Wrapping	$7.00	to	—
No. 1 Wrapping	6.50	"	6.75
Standard Wrapping	6.00	"	6.25
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	$1.65	to	$1.72
Wh. No. 1 M. G.	1.65	"	1.72
Wh. No. 1½	1.48	"	—
Wh. No. 2	1.55	"	—
Kraft Anti-Tar	1.38½	"	—
Kraft Unbl.	1.85	"	—
Manila No. 2	1.62	"	—

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$5.50	to	$6.40
Bleached	6.50	"	7.60

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$4.85
Br. Sr M'tif'd 10x12	3.45
Br. Jr. M'tif'd 9½x9¾	2.95
Br. Jr. Sgl. fold 10x10¾	3.10

Manila—per cwt.—C. l. f. a.

No. 1 Jute Tag	$13.80
Reg. Jute Manila	13.25
No. 1 Manila	9.75

Boards, per ton—

News	$92.50	"	—
Chip	90.00	"	—
Sgl. Mla. Lt Chip*	102.50	"	—
White Pat. Coated*	120.00	"	—
Kraft Liners 42 lb.	95.00	"	—
Binders Boards	126.00	"	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items
Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.00	$48.00
100% Rag	46.50	43.00	41.25
75% Rag	35.00	32.50	31.50
50% Rag	31.50	28.75	27.50
25% Rag	28.00	25.50	24.50

Ledgers, per cwt.

100% Rag Ext. No. 1	$54.25	$50.00	$48.00
100% Rag	46.25	42.50	40.75
75% Rag	36.00	33.25	31.75
50% Rag	31.00	28.00	27.00
25% Rag	27.25	24.75	23.75

Sulphite Bonds and Ledgers—
White, Assorted Items
Bonds, per cwt.

No. 1	$19.25	$17.50	$16.80
No. 2	18.25	16.50	16.00
No. 4	16.75	15.25	14.50

Ledgers, per cwt.

No. 1	$20.25	$18.35	$18.60
No. 2	19.25	17.50	16.80
No. 4	17.75	16.25	15.50

Free Sheet Book Papers—
White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$19.40	$18.60
No. 2 Glossy Coated	18.15	17.35
No. 3 Glossy Coated	17.65	17.00
No. 1 Antique (Water marked)	$15.90	$15.25
No. 2 Offset	16.00	14.75
A Grade E. F.	13.90	13.30
A Grade S. & S. C.	14.40	13.70
B Grade E. F.	Nominal	
B Grade S. C.	Nominal	
C Grade E. F.	Nominal	
C Grade S. C.	Nominal	
D Grade E. F.	Nominal	
D Grade S. & S. C.	Nominal	

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT
Groundwood	$75.00 to $80.00
Unbleached Sulphite	115.00 " 125.00
Bleached Sulphite	121.00 " 125.00
Bleached Soda	115.00 " 120.00
Unbleached Kraft	112.50 " 125.00
Southern Kraft	112.50 " 125.00

Canadian Quotations

Prices delivered with freight allowances unless otherwise specified:

	Per Short ADT
Select Unbleached Kraft (no freight allowance)	115.00 " —
Unbleached Sulphite	115.00 " 117.00
Bleached Sulphite	125.00 " 155.00
Glassine Unbleached Sulphite (no freight allowance)	112.00 " —
Bleached Soda	105.00 " 115.00
Groundwood	70.00 " 85.00
Sideruns Pulping News	75.00 " 80.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Kraft	170.00 to 195.00
Bleached Sulphite	175.00 " 185.00
Unbleached Sulphite	145.00 " 165.00
Unbleached Kraft	140.00 " 155.00

Finnish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$175.00 to —
Unbleached Sulphite	145.00 " 150.00
Unbleached Sulphate	140.00 " —

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50 to $12.00
Light Silesias	7.50
Unbleached Muslin	11.50 " 12.00
White Back Blue Overalls	8.50
Blue Overalls	7.75
Unbl. Fancy Shirt	5.00 " 5.50
Light Percales	6.00 " 6.50
Light Prints	5.25 " 5.95
Washables	4.00
Bleachable Khaki	6.00 " 6.50
Unbleachable Khaki	5.50 " 6.00
Cottonades	5.00 " 5.50

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$4.50
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	1.65
No. 2 Roofing Rags	1.55
No. 3 Jute Bagging	1.45
No. 4 Brussels and hard back carpets	1.45
No. 5A Roofing Rags	1.45

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.
New Dark Cuttings	$6.00 to —
New Mixed Cuttings	6.50 " —
Light Silesias	9.00 " 10.00
Light Flannelettes	8.00 " 9.00
New White Cuttings	13.00 " 15.00
Fancy Shirt Cuttings	9.00 " 10.00
Light Prints	8.00 " 10.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1	6.25 " 6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.
No. 1 White Linens	$14.00 to 16.00
No. 2 White Linens	12.00 " 13.00
No. 3 White Linens	8.00 " 9.00
No. 4 White Linens	8.00 " 9.00
No. 1 White Cottons	10.00 " 12.00
No. 2 White Cottons	8.00 " 9.00
No. 3 White Cottons	6.50 " 7.00
No 4 White Cottons	5.00 " 5.50
Extra Light Prints	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints	5.25 " 5.75
Dutch Blue Cottons	5.25 " 5.50
Checks and Blues	4.00 " 4.25
Linsey Garments	3.00 " 3.75
Dark Cottons	2.50 " 3.00
Old Shopperies	2.50 " 3.00
New Shopperies	2.50 " 3.00

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$4.75 to 5.00
Domestic Gunny, No. 1	4.25 " 4.50
Light Wool Tares	4.50 " 4.75
Heavy Wool Tares	4.75 " 5.00
Bright Bagging	4.25 " 4.50
Foreign Manila Rope	6.00 " 7.00
Domestic Manila Rope	5.75 " 6.50
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings	5.50 " 6.00
Mixed Strings	1.75 " 2.50

Waste Paper

Prices to Mills
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	155.00 to 165.00
No. 1 Hard White Envelope Cuts	145.00 " 155.00
No. 1 Hard White Shavings, unruled	145.00 " 155.00
No. 1 Hard White Shavings, ruled	110.00 " 130.00
Soft White Shavings, one cut	145.00 " 155.00
No. 1 Soft White Shavings	135.00 " 145.00
Soft White Shavings, Misc.	125.00 " 135.00
No. 1 Fly Leaf Shavings	55.00 " 60.00
No. 2 Fly Leaf Shavings	50.00 " 55.00
No. 1 Groundwood Fly Leaf Shavings	30.00 " 33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)
Mixed Colored Shavings	(nominal)
Mixed Groundwood Colored Shavings	(nominal)
Overissue Magazines	(nominal)
No. 1 Heavy Books & Magazines	25.00 " 30.00
Mixed Books	15.00 " 20.00
No. 1 White Ledger	85.00 " 90.00
New Manila Envelope Cuttings, one cut	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	25.00 " 30.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	100.00 " 105.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00 " 75.00
No. 1 Assorted Old Kraft	55.00 " 60.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers	45.00 " 50.00
No. 1 News	16.00 " 18.00
No. 1 Mixed Paper	15.00 " 17.00
Box Board Cuttings	16.00 " —
White Blank News	75.00 " 80.00
Overissue News	24.00 " 26.00
Old Corrugated	30.00 " 32.00
Mill Wrappers	22.00 " 25.00

Twines

All Prices Nominal
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—India	.26	to	.29
Fine Polished—Fine India	.31	"	.35
Unpolished—Paper Makers	.20	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—
(Hard Fiber)			
Mex. Sisal	.21	"	.24
Manila	.33	"	—
(Hemp)			
Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—New White No. 1	.11	to	.12
New White No. 2	nominal		
Light Silesias	.07½	"	.08
Black Silesias, soft	.06½	"	.07
New Unbleached	.10½	"	.11¼
Washable Prints	.06½	"	.07
Washable No. 1	.05	"	.05½
Blue Overall	.07½	"	.08
Cottons—According to grades—			
Washable Shredding	.03½	"	.04
Fancy Percales	.06¾	"	.07¼
New Black Soft	nominal		
Khaki Cuttings—Unbleachable Cotton Cuttings	.06	"	.06½
Bleachable Cotton Cuttings	.07	"	.07½
Men's Corduroy	.05½	"	.06
Ladies' Corduroy	.05	"	.05½
Cottonades	.05½	"	.06

Domestic Rags (Old)

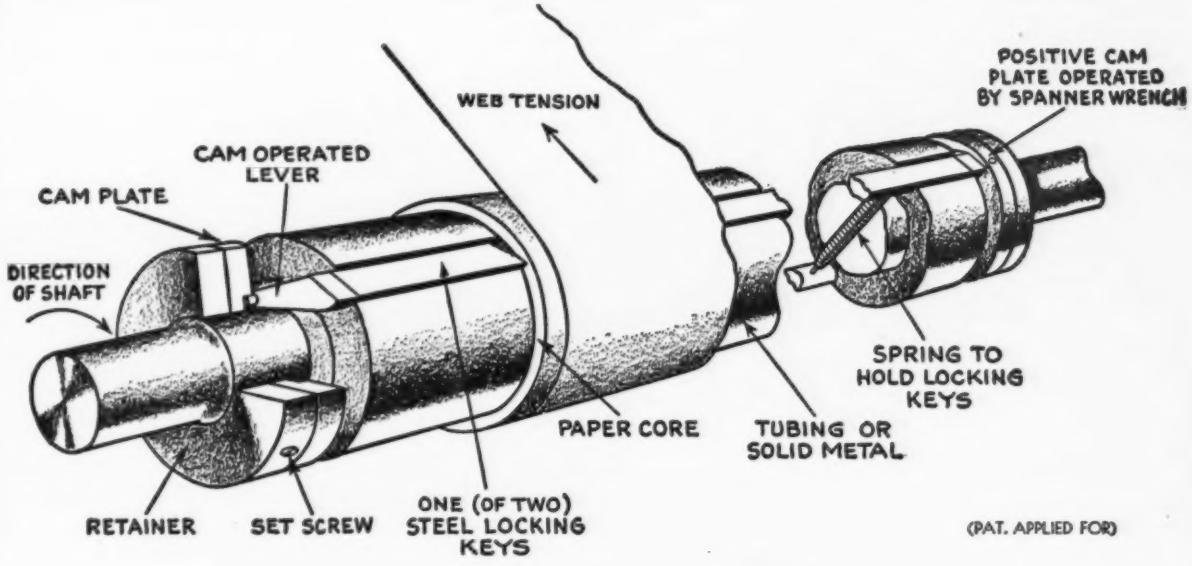
(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50	to	5.00
Mixed White	4.00	"	4.25
White No. 2—Repacked	3.50	"	3.75
Thirds and Blues—Miscellaneous	2.25	"	2.50
Repacked	2.75	"	3.00
Roofing Stock—Foreign No. 1	nominal		
Domestic No. 1	1.85	"	1.90
Domestic No. 2	1.75	"	1.80
Roofing Bagging	1.65	"	1.70
Old Manila Rope	6.50	"	6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—Foreign	nominal		
Domestic	4.50	to	5.00
No. 1 Clean Bright—Sisal Strings	.04	"	.04½
No. 2 Clean Bright—Sisal Strings	.03	"	.03¼
Sisal Jute	.02¾	"	.03
Scrap—No. 1	4.25	"	4.75
No. 2	1.75	"	2.00



(PAT. APPLIED FOR)

The Collette Winder Shaft—TYPE D

- Steel keys lock core firmly on shaft
  - Increase in tension raises locking pressure
    - Body made of magnesium tube for lightness
      - Weight is about one half pound per face inch
- Particularly popular for 3" I. D. cores
  - Ideal for drum winders and slitters
    - Can be used effectively on most shaft winders
      - Suited for both winding and unwinding operations
- No collars, wedges or other loose pieces
  - Winds hard, uniform rolls; no distorted cores
    - Speeds assembly of cores, reduces worker fatigue
      - Not recommended for iron or metal-tipped cores

WRITE FOR DIMENSIONAL DATA SHEET

UNION MACHINE COMPANY

FITCHBURG, MASSACHUSETTS

Wool Tares, heavy	4.75	"	5.00
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	to	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	70.00	"	75.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	80.00	"	85.00
Ledger, Colored	67.00	"	70.00
No. 1 Heavy Books & Magazines	30.00	"	32.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	15.50	"	—
Box Board Cuttings	15.00	"	—
Kraft Corrugated Cuttings	90.00	"	100.00
Old Corrugated	30.00	"	35.00
Overissue News	30.00	"	—
No. 1 News	18.00	"	20.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	to	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Misc.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	3.50	"	3.75
Mixed Kraft Env. & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	to	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.75	"	—
Domestic	4.75	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.08	to	—
Fancy Percales	.07½	"	.08
New White No. 1	.11	"	.11½
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.08	"	.08½
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Blue Overalls	.08½	"	.09
Soft Unbleached	.11	"	.12
Blue Cheviots	.08½	"	.09
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06½	"	.07¼
Corduroy	.03½	"	—
Khaki Canvas	.06¼	"	.06½
B. V. D. Cuttings	.10½	"	.11¼

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	to	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues,			
Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.75	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	to	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	65.00	"	—
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	18.00	"	20.00
No. 1 Mixed Paper	12.00	"	15.00
Old Corrugated	30.00	"	34.00
Mill Wrappers	22.00	"	

MARKETS

BLANC FIXE—Price boosts effective Oct. 1. Pulp is currently quoted at $77.50 per ton in barrels, car lots at works, and $82.50 l.c.l., f.o.b. works. Market steady, deliveries fair and supplies adequate.

BLEACHING POWDER—Supplies continue tight although demand has eased somewhat Shipments improved. Quotations are unchanged. Prices on bleaching powder range from $3 to $3.75 per 100 pounds.

CASEIN—Current prices on processed acid precipitated casein remain at previous levels and are quoted around 31½ to 33 cents per pound for domestic grades and 32 cents for imported grades f.o.b. shipping point.

CAUSTIC SODA—Demand exceeds production. Some improvement noted in shipments, market still tight. Solid caustic soda is reported at $2.85 per 100 pounds; flaked and ground offered at $2.25 to $3.25 per 100 pounds, car lots, at works.

CHINA CLAY—Market steady, domestic grades in good supply. Domestic filler clay is currently $9 to $11 per ton, car lots. Coating clay is currently $15 to $30 car lots. Imported clay is currently quoted at from $18 to $35 per ton, in car lots, export warehouse.

CHLORINE—Market tight as demand continues strong. Lack of tank cars continues to hamper deliveries. Quantities unchanged. Chlorine is currently quoted at $2.25 to $3.75 per 100 pounds.

ROSIN—Market strong, demand heavy. Price boost rumored of $.50 to $1.00 Gum rosin in drums per 100 pounds, net, in yard, New York, car lots, B, D, $8.25: E, $8.30; F, $8.48; G, $8.51; H, $8.60; I, $8.76; K, M, N, WG, $8.77; WW, $9.03. Wood rosin, per 100 pounds net, f.o.b., l.c.l., N. Y., $6.45; FF, $7.95; G, H, I, K, M, $8.52; N, $8.57; WG, $8.62; WW, $8.87; X, $8.97.

SALT CAKE — Demand continues strong with slight improvement in shipments. Prices remain unchanged. Domestic salt cake is quoted at $20 to $26.

SODA ASH—Expanding demand with no improvement in supply situation, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

STARCH—Active demand, export demand eased up. Starch prices follow slump in corn prices with the pearl grade quoted at $6.52 per 100 pounds; powdered starch at $6.43 per 100 pounds, car lots, Chicago.

SULPHATE OF ALUMINA — Active demand covered by fair supplies. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is quoted at $1.95 to $2.25 per 100 pounds in bags at works.

SULPHUR — Supplies ample to meet increasing demand. Annual contracts are quoted at $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $19.50 per long ton.

TALC—Domestic demand shows increasing strength with French grades steady. Domestic grades are currently quoted at from $16 to $30 per ton in mines; Canadian at $35 to $45 per ton. All prices in car lots.

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DIGESTED

The effect of the Government taxing policy and its correlated policy of paying off the Government debt is deflationary in that it tends to reduce overall bank deposits and spendable income. This effect is, however, countered by decreased saving of individuals and increases in installment buying. On balance there has been a relatively slight decrease in overall bank deposits.

But the available supply of spendable funds is such that many individuals have plenty to spend and up to recently have shown comparatively low resistance to increased prices of commodities. In portions of the buying public spendable income has been raised by wage increases and by fuller employment. High exports have drained off materials from the United States market and this increases the effect of the larger spendable income on prices.

In the meantime, although production has been increased in manufactured articles, the scarcities still persist in the durable goods field and in some farm products. The durable goods scarcities are the natural results of the all out war effort and of major strikes. The scarcities in farm products are largely due to high domestic consumption and the heavy purchases by government agencies for export to needy nations.—*From the Monthly Statistical Survey,* AMERICAN PAPER & PULP ASSOCIATION.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
August 23	103.7	August 24	106.1
August 30	104.1	August 31	105.6
September 6	84.7	September 7	86.7
September 13	106.9	September 14	105.1
September 20 (Revised)	108.6	September 21	105.8
September 27	*107.0*	September 28	106.6

COMPARATIVE MONTHLY SUMMARIES

1946				1947			
Jan.	94.7	July	94.0	Jan.	102.1	July	93.5
Feb.	98.4	Aug.	104.7	Feb.	105.9	Aug.	104.2
Mar.	104.4	Sept.	101.3	Mar.	106.1	Sept.	*101.8*
Apr.	102.7	Oct.	106.4	Apr.	105.1		
May	100.7	Nov.	105.5	May	106.2		
June	104.6	Dec.	97.0	June	106.0		
		Year Avg.	101.1				

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	86.2	95.2	92.1	88.2	87.9	88.2	100.2	*103.4*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
August 23	100	August 24	100
August 30	99	August 31	100
September 6	79	September 7	83
September 13	103	September 14	101
September 20	101	September 21	100
September 27	*102*	September 28	101

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	100	101	101	90	99	*96*				

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

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EDITORIAL

Patience

Charles Dickens could have done something with the delays that are imposed at times on those who bring complaints before courts in the United States—he did pretty well with the lengths to which litigation might be dragged out in the law courts of his day in England. An example of the hardy durability which is sometimes required by those who seek redress when a Government Bureau is involved in the case is supplied by Warren Bullock, manager of the Import Committee of the American Paper Industry, in citing the story of the filter paper that was imported in 1932.

A shipment of Japanese tissue at Los Angeles was classified in 1932 as tissue paper at six cents per pound and fifteen percent but was claimed by the importer to be dutiable at five cents per pound and 15 percent as filter paper. It was to be used in coffee making machines, he pointed out. The case was taken to the courts.

Meanwhile hundreds of other similar shipments were brought to this country at various ports. Importers protested in each instance against the levy of the higher rate. The Import Committee of the American Paper Industry has records of 358 such shipments which have been pending in the courts from 1932 to 1941 when Japanese shipments were halted by the war.

Now, however, the importer of the original shipment has decided to fight the matter no further and has abandoned his protest. It is expected that a large number of the other pending cases will be similarly abandoned. This case, according to Bullock, is a striking example of the persistence with which the Import Committee follows up every case which may involve a question of proper protection for the domestic industry. It is also a forceful example of the reason for such persistence.

Politics

Politics now rears its ugly head. M. Duplessis, premier of the Provincial Government of Quebec, was recently quoted in Dominion newspapers as deploring the withdrawal of a French industrial group which, it was said, had abandoned a 1.5 million option on a group of Quebec mills at Chicoutimi in that province.

The Premier said the French group had dropped plans to operate the mills after the release of a list of French investors in Canada.

Duplessis charged that publication of the list had allowed opposition elements in France to exert pressure on the group to withdraw from the venture. He added that his government had wanted to encourage the French interests because it was "desirable" to introduce as much French capital in the province as possible.

The Premier said that Quebec would have benefited through the experience of technicians placed in the mills by the French group and the Chicoutimi region would have benefited through creation of new industries.

Mr. Duplessis said another consideration was that France and other European countries presently are forced to obtain their newsprint from Russia and countries within the Russian orbit and that this involved a "certain control." It would have been possible, he added, to have helped relieve France from such a "dependent condition" if the French group had gone through with plans to work the Quebec mills.

Pathology

In a systematic study that is to be undertaken by the United States Department of Agriculture its Forest pathologists are expected to develop a greater fund of information on decay and salvage problems in insect- and fire-damaged timber, leading to possible methods for increasing the amount of available timber in many sections of the country, through the greater utilization of such damaged timber. Acting under authority of the Research and Marketing Act of 1946, the scientists will seek to determine the rate of decay and the maximum salvage period of budworm-killed spruce and fir in the Northeastern states, beetle-killed spruce in Colorado, and fire-damaged timber in California. One object of the study is to develop methods for quickly gauging the salvage value of a dead tree on the basis of its outside appearance.

E. A. Meyer, administrator of the Act, commenting on the need for this project, says, 'The findings will be of great value in increasing the amount of available timber in all sections of the country. They will be of particular importance in the Northeast where budworm is expected to damage spruce and fir forests severely. These forests are the source of supply for a large paper and pulp industry. The research is designed to provide timber owners with definite information on the rate of deterioration of killed timber so they can salvage it economically."

As spruce budworm damage is recent in the United States, but has occurred annually in Canada since 1935, preliminary studies will be made there, where the government has laid out plots in which trees are tagged as to time of death. Using some of these trees, United States investigators will attempt to determine how rapidly trees deteriorate in merchantable value, and thus save several years time that otherwise would be required in making the study.

W. L. Cook

Editor

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SECTION OF THE

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122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Determination of Carboxymethylcellulose in Paper*

By R. W. Eyler[1] and R. T. Hall[2]

Abstract

A method for the quantitative determination of carboxymethylcellulose in paper samples is described. The method involves extraction of the sample with sodium hydroxide, treatment with sulphuric acid to produce glycolic acid from the carboxymethylcellulose, and colorimetric measurement of the glycolic acid. Results are corrected for the apparent carboxymethylcellulose content of untreated pulp. The presence of other additives such as rosin size, urea-formaldehyde resin, and clay does not cause appreciable interference.

Recent studies on the use of sodium carboxymethylcellulose (CMC) as a papermaking chemical made necessary a quantitative method for determining the amount of this material retained in the paper after addition to the beater or after surface treatment. A suitable method for determining the carboxymethylcellulose should be applicable to paper samples containing from a few tenths to several per cent present as the aluminum or sodium salts, or as the free acid. In view of the variables to be expected in the papermaking process, an accuracy of the order of 5 to 10% of the amount present would be considered adequate.

The development of such a method was complicated by the following factors: first, only a small amount of CMC may be present; second, the degree of substitution, defined as the average number of carboxymethyl groups substituted per anhydroglucose unit, may be as low as 0.3; and, finally, the CMC is chemically so similar to cellulose, differing only in that about 10% of the hydroxyl groups are substituted with carboxymethyl groups in the case of low-substituted material.

Preliminary work on several possible methods showed none to be promising. Precipitation of metal salts *(1)* after extraction of the aluminum salt of carboxymethylcellulose (CMCA1) from the paper with sodium hydroxide proved unsatisfactory. Although sodium hydroxide seemed to be the best reagent for extraction, a high blank value on untreated pulp was encountered; furthermore, the precipitation of a compound of definite composition, even in the absence of a high blank value, appeared unlikely.

Gravimetric determination of the free acid (CMCH) recovered by acidification of the caustic extract and addition of alcohol to precipitate the free acid proved unfeasible because of the high blank value obtained under these conditions on the untreated pulp or paper.

Titration of the sodium hydroxide extract conductometrically using standard hydrochloric acid, as has been recommended for determining the degree of substitution of CMC *(2)*, also revealed the presence of considerable interfering material in untreated pulp or paper. Preliminary data by the Zeisel method for ethoxyl, depending upon formation and distillation of a volatile iodide, indicated that this procedure was not applicable.

Consideration was then given to the possibility of developing a method based upon measurement of glycolic acid produced from the carboxymethyl groups. Since the amount of glycolic acid to be expected from the CMC present in 1 gram of treated paper would be of the order of a few milligrams, a colorimetric method for measuring the glycolic acid was indicated. A survey of the literature with this approach in mind disclosed that Chowdhury *(3)* had reported the production of glycolic acid from carboxymethylcellulose by treatment with phosphorus triiodide and water. Feigl *(4)* described a qualitative color test for glycolic acid using a solution of 2,7-dihydroxynaphthalene in concentrated sulphuric acid; Calkins *(5)* has more recently developed a quantitative colorimetric method using this same reagent. The use of phosphorus triiodide for the ether cleavage followed by the use of concentrated sulphuric acid in the color development step suggested the possibility of serious interferences with the color measurement; consequently it was decided to try sulphuric acid as the ether-cleaving reagent.

Briefly summarized, the procedure finally developed involves extraction of the CMC with 6% aqueous sodium hydroxide solution, removal of the extracted paper by filtration, acidification of the filtrate to obtain a sulphuric acid concentration of 50%, and heating under reflux to produce glycolic acid. The method of Calkins *(5)* is used with some modification to measure the glycolic acid produced. A knowl-

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TABLE I.—ANALYSIS OF PURE SAMPLES OF CMC

Sample Number	Degree of Substitution Conductometric	Degree of Substitution Colorimetric
1	0.11	0.12
	0.11	0.12
		0.12
2	0.22	0.24
	0.23	0.24
		0.23
		0.23
		0.24
		0.23
		0.23
3	0.80	0.83
	0.81	0.79

edge of the degree of substitution of the CMC used is necessary to the calculation of the results. The results must be corrected for the apparent CMC content of untreated pulp or paper.

Experimental

Analysis of Pure Samples of CMC

The proposed method was first applied to samples of CMC in the absence of paper to determine the effectiveness of the ether cleavage, color development, and color measurement steps. Results of the study, calculated as degree of substitution, are shown in Table I along with values for the same samples determined by conductometric titration *(2)*.

Determination of Conditions for Extraction and Ether Cleavage

In order to determine the optimum times of extraction with sodium hydroxide and of heating with sulphuric acid, samples of treated paper prepared to contain appreciable but unknown amounts of CMC were analyzed. The extraction and heating times used and the results obtained are shown in Table II. The fact that increasing times of extraction and of heating with sulphuric acid did not lead to increased CMC values indicated that complete extraction and ether cleavage were being obtained in the shorter periods. On the basis of these studies and subsequent experiences, it was concluded that an extraction time of 2.5 hours and heating for an additional 3.5 hours with sulphuric acid is sufficient for most samples.

Determination of Blank Values

Although a negligible blank value (apparent CMC content of untreated pulp) would be desirable, it was found that the procedure gave blank values which were large enough to require consideration. However, these blank values were considerably smaller than those found for other procedures considered. Table III shows the results of analyses of four types of untreated pulps.

It will be noted that there is a significant difference in the blank values for different types of pulps. Some variation between different lots of the same type of pulp has also been experienced. The data in Table III are presented chiefly to show the magnitude of the blank value to be expected; it is recommended that a blank value be determined for the lot of untreated pulp or paper used to prepare each group of samples.

Preparation and Analysis of Known Samples

The final evaluation of the method was made using known samples prepared so that the CMC was present in a state approaching as closely as possible that resulting from papermaking conditions. Obviously, preparation of known samples exactly duplicating the unknown samples to be analyzed was not feasible. The known samples were made by adding quantitatively an aqueous ammonia solution of a known amount of CMCA1 of known substitution to sheets of paper which were then suspended over a hot plate to evaporate the solvent. The entire sheet was then ground in a laboratory Wiley mill, taking precautions to avoid loss of the sample, and was then weighed. The data from the analyses of these samples are shown in Table IV.

TABLE II.—DETERMINATION OF OPTIMUM TIMES FOR EXTRACTION OF CMC WITH NaOH AND REACTION WITH H_2SO_4
(CMC Content Unknown)

Sample Number	Extraction Time, hours	Heating Time, hours	Per Cent, CMC
1	1¾	5	3.7
	3	5	3.9
	4	5	3.9
	5	5	3.8
2	2	1½	9.1
	2	3	8.9
	2	5	9.0

TABLE III.—DETERMINATION OF BLANK VALUES ON VARIOUS PULPS

Type of Pulp	Blank Value *
Bleached sulphite	0.31
Bleached kraft	0.39
Soda pulp	1.17
Unbleached kraft	0.13

* Results are the average of several determinations, calculated as per cent CMC, degree of substitution 0.30.

Typical Results

Table V shows typical duplicate results obtained on two series of research samples of treated paper. The CMC content of these samples was not known before analysis; the values obtained are believed to be illustrative of the precision to be expected from the procedure for duplicate determinations.

Detailed Procedure

Reagents

1. Sodium hydroxide solution, 6%. Dissolve 30 grams of reagent-grade sodium hydroxide in 470 ml. of water.

2. Dihydroxynaphthalene solution. Dissolve 0.100 gram of 2,7-dihydroxynaphthalene (Eastman Kodak Co., Cat. No. 4408) in 1 liter of 95% sulphuric acid. Allow this solution to stand until the initial yellow color disappears before using (usually 5 to 6 hours is required). Store this solution in a dark cabinet.

3. Standard glycolic acid solution. Dry some glycolic acid (Eastman Kodak Co., Cat. No. 998) in a vacuum desiccator at room temperature overnight. Accurately weigh 0.025 gram of the dried material, dissolve in distilled water, and make up to volume in a 250-ml. volumetric flask. Prepare a fresh solution each time a calibration is carried out.

Apparatus

1. Multiple-stirring apparatus such as Fisher Scientific Company, Cat. No. 14-506.

2. Spectrophotometer. A Beckman Model DU spectrophotometer, a wavelength of 540 millimicrons, a slit width of 0.025 mm., and 1-cm. cells were used. Other convenient photometers may be used.

3. Erlenmeyer flasks, 250-ml. capacity, with ground-glass joints.

4. Condenser, West or Liebig type, about 400-mm. jacket, with ground joint to fit the Erlenmeyer flasks.

5. Wiley mill, intermediate size, A. H. Thomas Co., Philadelphia, Pa., Cat. No. 4276-M, or similar type grinder.

Preparation of Color Standards

Measure accurately 0.2-, 0.5-, and 1.0-ml. portions

TABLE IV.—ANALYSIS OF SAMPLES CONTAINING KNOWN AMOUNTS OF CARBOXYMETHYLCELLULOSE

Sample Number	Per Cent CMC Added	Per Cent CMC Found	Difference Per Cent CMC
1	3.50	3.45	—0.05
		3.38	—0.12
2	3.68	3.20	—0.48
		3.57	—0.11

TABLE V.—RESULTS ON TYPICAL UNKNOWN SAMPLES

Sample Number	Per Cent CMC Found
1	0.35, 0.31
2	1.3, 1.6
3	1.8, 1.6
4	1.9, 2.0
5	2.0, 1.9
6	2.7, 2.4
7	2.0, 2.1
8	2.2, 2.3
9	2.8, 3.0
10	2.1, 2.3
11	2.6, 2.7

of the standard glycolic acid solution into separate 8 by ¾-inch test tubes and to each add from a graduate 20 ml. of the dihydroxynaphthalene solution. Place the test tubes in a beaker of boiling water and heat for 20 min. Place the test tubes in a container of cold tap water to cool. Transfer the contents of the test tubes to 50-ml. volumetric flasks, rinse the test tubes with three 5-ml. portions of distilled water adding the washings to the flasks with the aid of a small funnel. The water should be added carefully with adequate swirling to mix, taking care to prevent the mixing from taking place in the neck of the flask. *Caution:* Watch for possible spattering of the acid solution. Raising the funnel slightly with the forefinger provides an air vent during additions to the flask.

Cool the flasks and contents to room temperature in a water bath, make up to volume with water, cooling again if necessary. Read the color of the standards with the spectrophotometer or colorimeter against a blank of 20 ml. of color reagent treated in the same fashion as the standards. Plot concentration of glycolic acid versus colorimeter reading. The calibration curve should be checked about once each week.

Procedure

Grind the paper sample in a Wiley mill to pass a 20-mesh screen. Dry the ground material for 2 hours at 105°C. Weigh 1-gram samples, to the nearest 0.001 gram, into 150-ml. beakers taking precautions to avoid absorption of moisture. Add from a graduate 25 ml. of 6% sodium hydroxide solution to the beaker and stir rapidly for 2.5 hours being careful to avoid collection of the paper on the sides of the beaker above the liquid.

Filter the mixture through a sintered glass funnel with suction, collecting the filtrate in a 250-ml. Erlenmeyer flask with ground-glass joint. This is conveniently done with the aid of a double-holed rubber stopper fitted in the neck of the flask with the funnel in one hole and the vacuum connection in the other hole. A safety screen should be placed around the flask during filtration. Wash the beaker and pulp with 25 ml. of water applied in two or three portions, combining the washings and filtrate. Add carefully 36 ml. of 95% sulphuric acid to the combined filtrate and washings. The final acid concentration will then be 50% sulphuric acid. Attach the flasks to the reflux condensers and heat under reflux for 3.5 hours on a hot plate (the temperature in the boiling liquid should be 125 to 130°C.). Allow the mixture to cool to room temperature, and dilute to 100 ml. with 50% sulphuric acid.

Remove duplicate 1-ml. aliquots from the solution with a pipet; these aliquots are designated "A" and "B" for convenience in description. To the "A" aliquots in 8 by ¾-inch test tubes add 20 ml. of dihydroxynaphthalene solution. To the "B" aliquots add 20 ml. of concentrated sulphuric acid. Place the test tubes in a beaker of boiling water and heat for 1.5 hours. An additional test tube containing 20 ml. of concentrated sulphuric acid is heated simultaneously; this solution is used as the blank for setting the instrument at 100% transmission in reading the color intensities of the "B" aliquots. The preparation of a reagent blank for use in measuring the color intensities of the "A" aliquots is described in the next paragraph. Cool and dilute the solutions and measure the color intensities as directed under Preparation of Color Standards.

Prepare a reagent blank solution to be used in the spectrophotometer in reading the color intensity of the "A" aliquots by mixing 25 ml. of 6% NaOH solution and 25 ml. of water. Add 36 ml. of 95% sulphuric acid and reflux this mixture simultaneously with the unknown samples. Cool and dilute using the same procedure employed on the unknown samples. Pipet exactly 1 ml. of this solution into a test tube, add 20 ml. of color reagent, heat for 1.5 hours in boiling water to develop the color, and dilute to 50 ml. as directed for the unknown samples.

From the optical density values found for the "A" aliquots subtract the density value of the corresponding "B" aliquots to get the corrected density, that is, corrected for the brown color in the aliquot taken. Using this corrected density value, read the glycolic acid concentration from the calibration curve. This value is called "mg. glycolic acid in aliquot" in the calculation section below.

Determine the blank value for pulp or paper (untreated with CMC) by weighing 1-gram samples of pulp or paper and carrying them through the same procedure used for the unknown samples. Subtract the value of mg. glycolic acid per gram of pulp or Y from the corresponding value for the treated pulp before calculating the per cent CMC in equation 1 of the calculations. It is advisable to make this blank determination on four or five samples from each new lot of pulp and use an average value.

Calculation

$$\frac{Y \times (162 + 80\ (\text{Degree of Substitution})) \times 0.1}{76\ (\text{Degree of Substitution})} = \%\ \text{CMC}$$

where $Y = \dfrac{\text{Mg. Glycolic Acid in Aliquot} \times \text{Aliquot Factor}}{\text{Grams of Sample}}$

162 = molecular weight of the anhydroglucose unit in cellulose

80 = net increase in weight of the anhydroglucose unit for each sodium carboxymethyl group added

76 = molecular weight of glycolic acid

Degree of substitution may be determined by published methods *(2)*.

Discussion

Application of the procedure to pure samples of CMC gave values shown in Table I which are in good agreement with those obtained by conductometric titration with hydrochloric acid, thus establishing the ether cleavage and colorimetric steps in the procedure.

While the times for extraction and heating with sulphuric acid given in the detailed procedure have been found satisfactory for most samples, certain samples may require longer extraction periods. Other additives not easily soluble in aqueous sodium hydroxide may make the extraction of the CMC more difficult. Pulps of low freeness may also be somewhat more difficult to extract. In such cases extraction for varying periods of time to determine optimum conditions is recommended.

The analysis of samples containing known amounts of CMC indicates that results about 5% below the true value may be expected. Application of the method to numerous samples shows that results on

duplicate samples agree within about 0.2% CMC. While the majority of the samples analyzed have contained low-substituted CMC, experience indicates that the method is satisfactory for higher-substituted material also.

The effect of such other additives as rosin size, urea-formaldehyde resins, and clay has been studied. Rosin size and urea-formaldehyde resins caused no difficulty, although the determination of blank values on papers treated with these materials is recommended. In the case of samples containing clay, especially, the filtration of the solution resulting from heating with sulphuric acid may be desirable to improve the reproducibility of results.

Little use has been made of the procedure for qualitative purposes. The fact that the apparent CMC content of untreated pulps is not negligible makes interpretation of the results of a purely qualitative test difficult. Consequently, even though qualitative information is all that may be desired, use of the method in a quantitative manner will give the most reliable results.

Summary

A method is described for determining small amounts of CMC in paper samples. The method involves extraction with sodium hydroxide, treatment with sulphuric acid to produce glycolic acid from the CMC, and colorimetric measurement of the glycolic acid. Results are corrected for the apparent CMC content of untreated pulp or paper. The presence of other additives including rosin size, urea-formaldehyde resin, and clay has been found not to cause appreciable interference.

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3. Chowdhury, J. K., *Biochem. Z.* 148, 76-88 (1924).
4. Feigl, F., "Qualitative Analysis by Spot Tests," New York, Nordemann, 1939.
5. Calkins, V. P., *Ind. Eng. Chem., Anal. Ed.* 15, 762 (1943).

TAPPI Notes

E. G. Mullen, formerly of the Claremont Paper Company, is now with the Dicalite Company, 421 Ellicott Square Bldg., Buffalo, N. Y.

Arthur R. Iingham, formerly of Louis De Jonge & Company, is now comptroller for the Empire Box Company, Stroudsburg, Pa.

Charles H. Chapman of the Hercules Powder Company has been transfrred from Kalamazoo, Mich., to Marrero, La.

C. E. Geddes Thomson is now vice president and treasurer of Thomson-Smeltzly Corporation, 126 So. Clinton Street, Chicago 6, Ill.

F. F. Newkirk is now director of research for the American Reenforced Paper Company, Attleboro, Mass.

William E. Wegner, formerly of the Crown Zellerbach Corporation, is now a graduate assistant at Ohio State University, Columbus, Ohio.

Hubert J. Privette, formerly consulting chemist, is now chemical engineer for th R. J. Reynolds Tobacco Company, Raleigh, N. C.

Raymond T. Baker, formerly of the B-F-D Company, Plattsburg, N. Y., is now mill manager, Pulp Division, Weyehaeuser Timber Company, Longview, Wash.

Barry M. Turner is now chief engineer, International Paper Company, New York, N. Y.

Paper in the Making

The many friends of the late George Carruthers, president of the Interlake Tissue Mills Company, Ltd., Toronto, Ont., will welcome the announcement that his long awaited book on the history of paper making has been published. "Paper in the Making" is a 712 page volume (6x9) and is divided into two parts Part I deals with the first hundred years of paper making by machine and Part II deals with the first century of paper making in Canada.

As stated by the author, the purpose of the book is to record, in chronological order, the material facts relating to the achievements of the pioneer papermakers; to interest the present generation paper men in the lives and times of their predecessors; to serve as a reference book in the field of papermaking history and to perpetuate the memory of those benefactors who, by their labor contributed so greatly to the advancement of civilization.

Briefly, the first part of the book covers such subjects as: The first paper machine (Robert—1799): the John Dickinson paper machine—1805; the M. G. paper machine—1830; Friedrich Gottlob Keller — 1843; Heinrich Voelter—1856; Hugh Burgess—1852; Benjamin C. Tilghman—1866; Carl Daniel Ekman—1872; Alexander Mitscherlich—1879; Karl Kellenr—1882; Sulphate cellulose wood pulp—1884.

Part II covers the history of the following Canadian paper mills: St. Andrews—1805; Acadian, Crook's, Don Valley, Stanstead and the others up through 1905.

Those who knew Mr. Carruthers who, until the time of his death a few years ago, recall him as one of the elder-statesmen of the Canadian Pulp and Paper Association. He was a great story teller and was always present at the meetings of the Technical Section and of the trade associations. He had an alert mind and the thoroughness with which he gathered the information for this book was characteristic of him. There is a great need for other men like George Carruthers—executives willing to give some of their time to the social and educational side-runs of the industry. Although he was not a technical man he attended the meetings of the technical groups both in Canada and the United States and listened attentively to the presentations. Paper in the Making is a fine monument to the memory of such a man.

Paper in the Making may be purchased from Timely Publications, 23 Scott Street, Toronto 1, Ontario at 7.00 per copy.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paped Industry has elected the following to membership:

Howard J. Bettner, Production Engineer, The Black-Clawson Co., Hamilton, Ohio. Attended the University of Cincinnati.

L. Wesley Munger, Production Coordinator, The Black-Clawson Co., Hamilton, Ohio, a 1937 graduate of the University of Kentucky.

William J. Jackel, District Manager, Pressure Vessel Sales, A. O. Smith Corp., Chicago, Illinois, a 1932 graduate of Lehigh University.

Albert C. Jones, Chemist, Champion Paper and Fibre Co., Canton North Carolina, a 1947 graduate of the University of North Carolina.

Henry Nutchey, Sulphite Control Engineer, Abitibi Power & Paper Co., Iriquois Falls, Ont., Canada, a 1946 graduate of the University of British Columbia.

Additional Data on the Recovery of Wet Pulp Mats from Compressive Deformation*

By C. O. Seborg[1] and F. A. Simmonds[1]

Abstract

At constant temperature, the recovery values for wet fiber mats from compressive deformation were little affected until the surface tension of the suspensions was reduced to about 60 dynes per centimeter, but further reduction resulted in marked, though variable, effects. Irrespective of the effect on the recovery value, a decreased surface tension always resulted in a decreased shrinkage of the test mat upon drying in air. The surface tension of ordinary pulp suspensions is the range where recovery values are not affected.

At the same surface tension and temperature, different wetting agents, although not at the same concentration, resulted in different recovery values. This is taken to indicate adsorption of the wetting agent and its influence on the recovery values by a change in the condition of the external fiber surface. . .

At constant surface tension and variable temperature, no consistent trends were found, recovery values for some pulps increasing with increasing temperature, others decreasing, and some remaining unchanged.

As duration of compression was increased, the recovery of unbeaten and slightly beaten pulps was reduced considerably and in about the same degree, but the effect became progressively less with increased beating. These increases in degree of plastic deformation were indicated by the results of recovery determinations made on screen classified size fractions from a beaten pulp and also from groundwood pulps to be due to "fines" in combination with longer fibers. The fact that groundwood pulps have lower recovery values than sulphate and sulphite pulps is also due to the larger percentage of fines in the groundwood pulps.

It was confirmed that sulphate pulps are, in general, higher in recovery than sulphite pulps.

In a previous report *(1)* the recovery from compressive deformation of a bleached southern pine sulphate pulp was shown to have decreased 25%, apparently linearly, as the temperature of the wet mat was increased over the range of 13 to 42° C. The surface tension of the water was not controlled in this instance and, although the change in the value was relatively small, it was necessary to recognize that two variables were undergoing change simultaneously. A study was then made to determine if the effect of these two variables could be isolated. Data were also obtained on both the influence of duration of compression and screen fractions on recovery values. The results of these studies are reported here.

Apparatus and Procedure

The apparatus and procedure used are essentially the same as previously described *(1)*. Improvements have been made, however, by providing means for controlling the temperature and eliminating possible side components of force during compression. The latter is achieved by transmitting pressure from a lever through a piston to a ball bearing automatically centered in a plunger in direct contact with the pulp mat. This apparatus is shown in Fig. 1. The temperature control apparatus, diagrammed in Fig. 2, maintains the selected temperature at 25° C. within ±0.5° C. This degree of accuracy holds over a range of 11 to 75° C., provided the water entering the heater is at constant temperature. In operation, artesian water at a temperature of 11 to 12° C.,

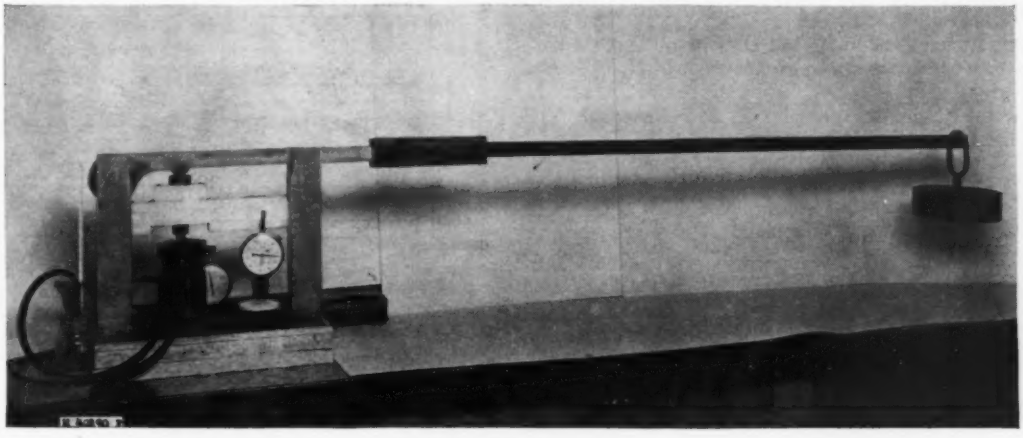

FIG. 1
Recovery Apparatus.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24-27, 1947.

[1] Chemist, Forest Products Laboratory[2], Forest Service U. S. Department of Agriculture.

[2] Maintained at Madison, Wisconsin, in cooperation with the University of Wisconsin.

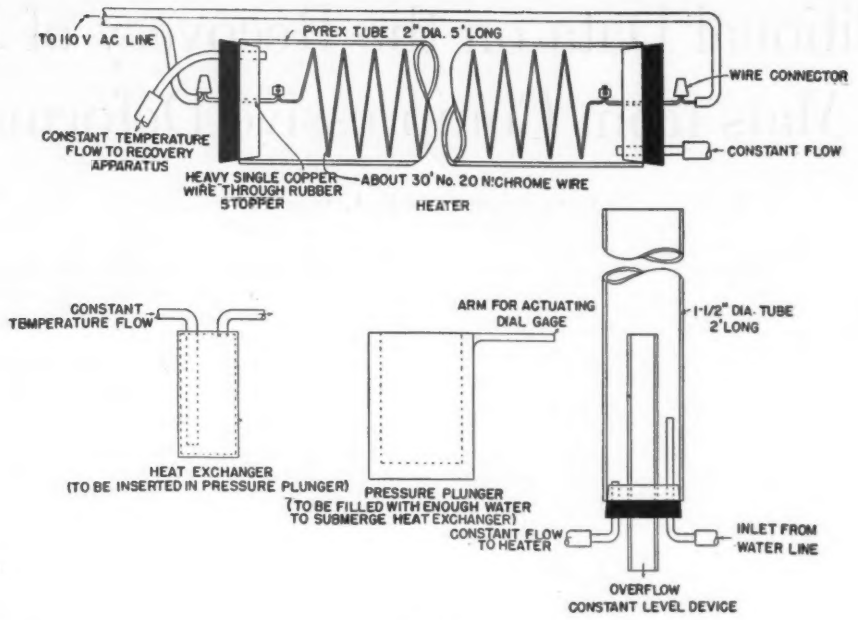
TO 110 V AC LINE
PYREX TUBE 2" DIA. 5' LONG
WIRE CONNECTOR
CONSTANT TEMPERATURE FLOW TO RECOVERY APPARATUS
CONSTANT FLOW
HEAVY SINGLE COPPER WIRE THROUGH RUBBER STOPPER
ABOUT 30' No. 20 NICHROME WIRE HEATER
CONSTANT TEMPERATURE FLOW
ARM FOR ACTUATING DIAL GAGE
1-1/2" DIA. TUBE 2' LONG
HEAT EXCHANGER (TO BE INSERTED IN PRESSURE PLUNGER)
PRESSURE PLUNGER (TO BE FILLED WITH ENOUGH WATER TO SUBMERGE HEAT EXCHANGER)
CONSTANT FLOW TO HEATER
INLET FROM WATER LINE
OVERFLOW CONSTANT LEVEL DEVICE

FIG. 2
Temperature Control Device.

available throughout the year, was passed from an adjustable constant level device through the heater and then to the compression apparatus. An occasional slight adjustment of the constant level apparatus offset the small variation in the temperature of the entering water. Temperature control in the 11 to 75° C. range was accomplished by using various sized orifices to regulate the rate of flow of water to the heater. The stream of constant temperature water passed through a copper coil in a hollow plunger of the compression apparatus and overflowed to a diked base, thus keeping both sides of the mat at the desired temperature. Prior to compression, the pulp mats were brought to the desired temperature by conditioning in a constant temperature bath.

The weight of the wet mats prior to pressing was standardized at 50 grams, since this was found to improve repetitive accuracy. In the earlier trials, the weight of the pulp samples on the moisture-free basis was 6 grams. With the improved apparatus it was found that a sample weight of 4 grams could be used satisfactorily. It is thought that as thin a mat as possible should be used.

The surface tension of the effluent obtained when the mats were formed was measured with a DuNoüy interfacial tensiometer at a temperature of 25°±2° C. The wetting agents Aerosal OT and Nacconal NR were used to adjust the surface tension.

Recovery of Pulps and Screen-Classified Fractions Using Improved Apparatus

Pulps

Chemical pulp. Recovery values for several unbleached, unbeaten sulphate and sulphite pulps from the same species of wood are given in Table I. These results accord with previously reported indications that sulphate pulps are higher in recovery than sulphite pulps.

Groundwood pulp. The order of magnitude of recovery values for groundwood pulps is shown in Fig. 3 to be lower than that of sulphite pulps. However, the recovery value of the southern pine groundwood was practically as high as the highest value for the sulphite pulps listed.

Screen-classified Fractions

Chemical pulp. In Fig. 4, the recovery value of the coarse fraction from a beaten bleached softwood alpha pulp is compared with other samples comprising the coarse fraction plus increasing percentages of a fine fraction passing 115-mesh and retained on 150-mesh, as well as with this fine fraction alone. Increasing the percentage of fines decreased the recovery, the unit effect being greatest with the first 25% added. The effect of fines is further emphasized by comparing the recovery values of the 115- to 150-mesh and 24-mesh fractions and the whole pulp, which were 45, 79, and 55%, respectively.

Groundwood pulps. Recovery values of fractions given in Fig. 3, with the same influence of fines in

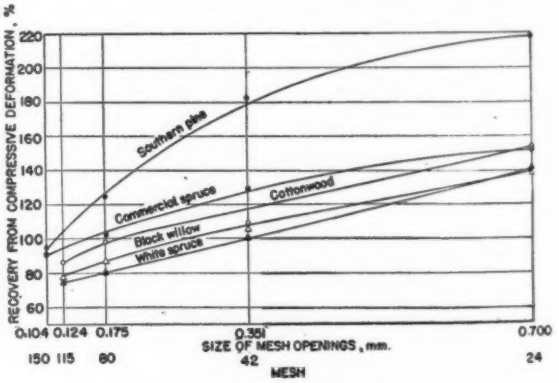

FIG. 3
Recovery Values of Groundwood Pulps and Screen-Classified Sized Fractions from Them.

Sample Weight, 4 Grams, Moisture-Free Basis

Pulp	Recovery of Whole Pulp, %	Amount Passing 150-Mesh Screen
Cottonwood	38	49
Black Willow	42	54
Southern Pine	63	56
White Spruce	..	52
Commercial Spruce	45	40

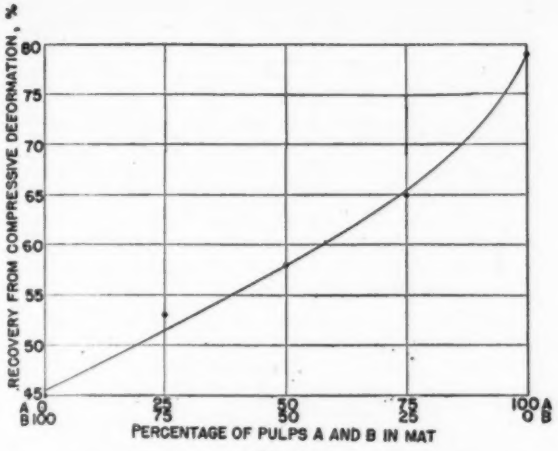

FIG. 4

Recovery Values of Screen-Classified Sized Fractions of a Beaten Bleached Alpha Pulp.
A—Retained on 24 Mesh, 0.7 mm. on Side of Opening.
B—Passing 115 Mesh but Retained on 150 Mesh.
Sample Weight 4 Grams on Moisture-Free Basis.

and also the whole pulps of several groundwoods are evidence. In this instance, however, the finest fractions collected (between 115- and 150-mesh) were, for each pulp, still higher than (roughly twice) that of the whole pulp. The fraction passing 150-mesh was not collected, but it seems obvious that this is the fraction which is responsible for the final reduction of the recovery of the whole pulp.

Of the five groundwoods, southern pine had the highest percentage of fines passing 150-mesh. The higher recovery value of this pulp, in spite of the larger amount of fines, is attributed to the fact that this groundwood had a greater amount of summerwood fibers than the other pulps. It has been shown *(2)* that summerwood fibers are markedly stiffer than springwood fibers, and that fiber stiffness is a major factor influencing recovery.

Effect of Duration of Compression

As the duration of compression was increased, the recovery of the unbeaten and slightly beaten pulp was decreased considerably and in approximately the same degree, but the effect became progressively less with increased beating, as shown in Fig. 5. This trend, the same as that reported previously *(1)* on 12-gram samples (moisture-free basis) of unbeaten and beaten bleached loblolly pine sulphate pulp, was indicated due to "fines" by the results of recovery determinations made on screen-classified sized fractions from both beaten pulp and mechanical pulps.

In the present instance it was observed that recovery values, except for the stuff lowest in freeness, continued to be decreased after the thickness of the mat had reached a constant value.

Effect of Weight of Pulp in Mats of Groundwood Pulps

The recovery of groundwood pulps of different species and of different weights of pulp in the mats is shown in Fig. 6. The influence of the amount of pulp in the mat is found to be the same with groundwoods as with the chemical pulps previously reported. The curves for the southern pine and birch are in a distinctly different category than those of the other groundwoods. The southern pine groundwood was markedly higher in strength than the other pulps although the birch possessed no outstandingly different strength properties as determined by the usual test methods.

Effect of Temperature, Surface Tension Not Controlled

The recovery of a bleached southern pine sulphate pulp had been found previously to decrease 25%, apparently linearly, as the temperature was increased from 13 to 42° C. with no control of surface tension. Additional data dealing with this relation for two unbleached pulps over the temperature range of 0 to 42.5° C. are in Fig. 7. In this instance neither the recovery nor the surface tension was markedly affected by changes in temperature. Since the recovery of some pulps varies with temperature, this variable must be controlled at all times. In those instances in which the variation due to change in temperature was greater than the variation due to repetitive determinations, it was found that temperature control within ± 2° C. was adequate.

It was observed that surface tension tended to decrease up to 10% during beating.

Effect of Temperature Upon Recovery at Reduced Surface Tension

Foam Resulting from Wetting Agent

When a pulp suspension at low surface tension was agitated prior to mat formation, foam was formed and subsequently occluded in the mat. This resulted in extremely bulky mats probably due to both the reduced contracting force of the water and the mechanical resistance of the foam. Deaerating the pulp suspensions in a vacuum prior to the forming of the mat helped little because considerable foam was formed again when the suspension was poured into the deckle box for mat formation. However, deaeration of the mats after formation under

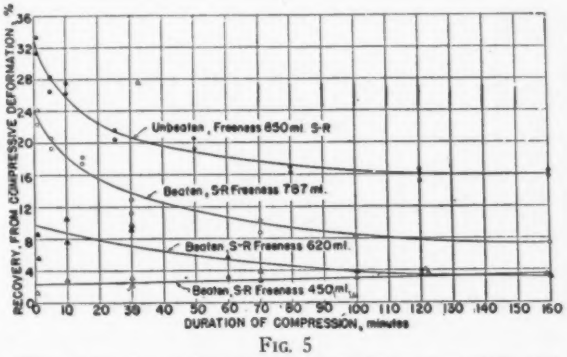

FIG. 5

Effect of Duration of Compression upon the Recovery of Unbleached Jack Pine Sulphite Pulp and Stuffs.
Sample Weight 6 Grams on Moisture-Free Basis.

repeated vacuum treatment removed the foam. Under the standard pressure of 12 p.s.i. mats of unbleached jack pine sulphite pulp at low surface tension, not previously subjected to vacuum, had somewhat lower solid volume fractions than corresponding ones at normal surface tension, depending on the degree of beating. For unbeaten pulp, the respective values were 0.90 and 0.96 and for well beaten pulp they were 0.96 and 0.98.

The average recovery values in Table II of mats with and without the presence of foam are in good agreement, showing the presence of foam to be without effect upon the recovery values at reduced surface tension.

Temperature Effect

The effect of temperature on recovery at reduced surface tension is illustrated in Fig. 8. The recovery values of the unbeaten and beaten sulphite pulp decreased with increase in temperature. This trend at reduced surface tension is opposite to that of the same pulp at normal surface tension. The influence of temperature on the sulphite pulp decreased to some extent as the degree of beating was increased. In the case of the sulphate pulp, the effect of temperature was not altered by beating.

Both the unbeaten and beaten sulphate pulps showed higher recovery at reduced surface tension as compared to the values at normal surface tension, whereas, in the case of the sulphite pulp, the recovery of the unbeaten pulp was lower and that of the beaten pulp was higher at reduced surface tension.

Effect of Surface Tension at Constant Temperature

To determine the effect of surface tension, the pulp suspensions, either with or without the wetting agent, were allowed to stand 16 hours before determining recovery. This procedure was adopted after erratic results were obtained with suspensions that had stood only a short time after the addition of the wetting agent.

The influence of surface tension on recovery of unbleached unbeaten, and beaten Douglas fir sulphate and sulphite pulps is shown in Figs. 9 and 10.

It is apparent upon inspection of the recovery values at reduced surface tension, as adjusted with the two different wetting agents, that they had an appreciable direct effect, probably by virtue of adsorption, on the recovery characteristics of the unbeaten pulp. The direct effect, although greatly minimized, seems to persist in the beaten pulps. It is, therefore, not possible to draw from these data a simple relation, if one exists, between recovery and surface tension as varied by the wetting agents used.

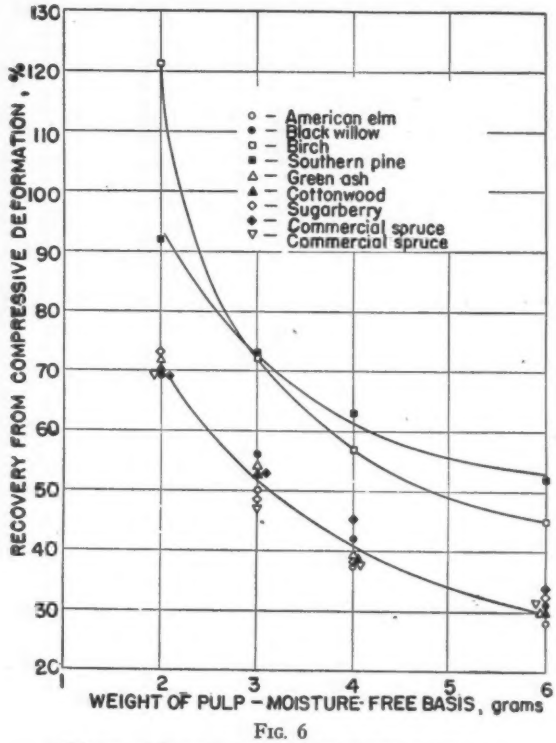

FIG. 6

Relation of Recovery and Weight of Pulp in Mats of Groundwood Pulps

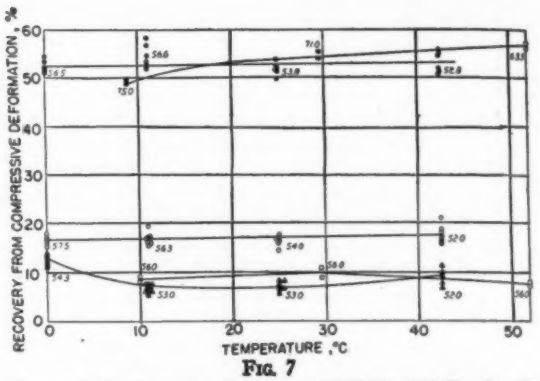

FIG. 7

Relation of Temperature and Recovery of Unbleached Douglas Fir Sulphite and Western Hemlock Sulphate Pulps and Stuffs (Surface Tension Not Controlled).
Sample Weight 6 Grams on Moisture-Free Basis.
The Numerical Values at Each Group of Points on Curves Refer to Surface Tension in Dynes per Centimeter.

If, however, the recovery values at the lowest surface tension used are compared with those at the normal surface tension as given in Table II, it is seen that an appreciable increase in recovery did occur when the surface tension was reduced to approximately 30 dynes per centimeter.

Surface Tension and Shrinkage

After determining the recovery of Douglas fir sulphite pulp and stuffs, the mats were air dried at 65% relative humidity, the diameters measured, and the shrinkage calculated as a percentage of the diameter of the wet mat. The shrinkages at three different freeness values over a wide range of surface tension are plotted in Fig. 11.

Although the essentially linear decrease of shrinkage with decrease in surface tension may have been due partly to adsorbed wetting agent blocking fiber surface available for bonds, the reduction in surface tension is believed to be the major factor. For example, Campbell *(3)* has shown by calculation that the surface and internal tensions of water evaporating from fiber structure are great great enough to account for a compacting force in causing the shrinkage of the structure.

Conclusions

Recovery of pulps and stuffs from compressive deformation was affected by the duration of com-

TABLE I.—RECOVERY FROM COMPRESSIVE DEFORMATION OF UNBLEACHED, UNBEATEN SULPHATE AND SULPHITE PULPS

Species	Recovery[1] Sulphate, %	Sulphite, %
Red gum	100.8	64.6
Douglas fir, I	96.1	62.5
Douglas fir, II	74.6	52.8
Jack pine, I	91.9	50.5
Jack pine, II		26.3
Western white pine	69.1	56.1

[1] Sample weight 6 grams mosture-free basis, normal surface tension. Averages of four closely agreeing values.

TABLE II.—COMPARISON OF RECOVERY VALUES OF PULP MATS WITH AND WITHOUT THE PRESENCE OF FOAM

Condition of pulp mat	Recovery from Compressive Deformation Sulphate pulp[1]	Sulphite pulp[1]
Normal surface tension		
Normal mat	69.1	56.1
Deaerated mat	72.5	53.4
Reduced surface tension[2]		
Mat with foam	148.0	71.8
Deaerated mat	144.9	70.5

[1] Unbleached, unbeaten pulp from Western white pine.
[2] Surface tension lowered to 28.5 dynes per centimeter with Aerosol OT wetting agent.

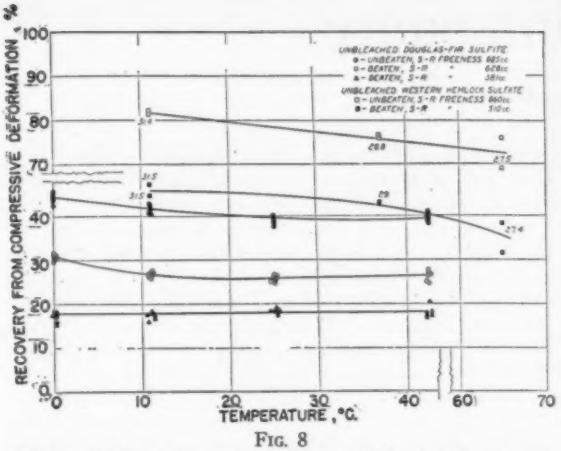

FIG. 8

Relation of Temperature and Recovery of Unbleached Douglas Fir Sulphite and Western Hemlock Pulps and Stuffs at Reduced Surface Tension.
Surface Tension Reduced with Nacconal NR.
Sample Weight 6 Grams on Moisture-Free Basis.

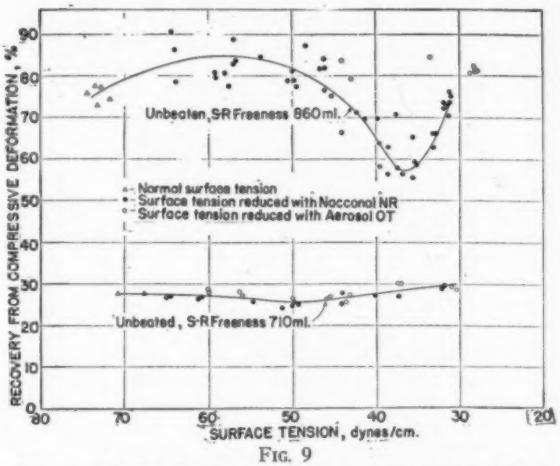
RECOVERY FROM COMPRESSIVE DEFORMATION, %
Unbeaten, S-R Freeness 860 ml.
Normal surface tension
Surface tension reduced with Nacconol NR
Surface tension reduced with Aerosol OT
Unbeated, S-R Freeness 710ml.
SURFACE TENSION, dynes/cm.

FIG. 9

Relation of Surface Tension and Recovery of Douglas Fir Sulphate Pulp and Stuffs at Constant Temperature.
Sample Weight 6 Grams on Moisture-Free Basis.

pression. The longer the mat was pressed, the lower the recovery value, especially in the case of the unbeaten pulps, indicating the effect of plasticity of the fibers.

Recovery values of chemical and mechanical pulps and stuffs which had been classified as to size of fractions showed the large influence of the fraction passing 150-mesh on the recovery of the whole pulp.

It was confirmed that sulphate pulps as a class are higher in recovery than sulphite pulps, and both are righer than groundwood pulps.

The effect of temperature on recovery values is a complex one, being influenced by such factors as surface tension, plasticity, and the physical condition of the fiber surfaces. At constant surface tension and variable temperature there were no consistent trends, recovery values for some pulps increasing with increasing temperature, others decreasing, and some remaining unchanged.

When the surface tension was varied at constant temperature with two different wetting agents, the latter were found to have a direct effect on the recovery characteristics of the pulp itself. This indicates that it will be extremely difficult to determine the exact effect of surface tension on recovery. It was, however, possible to show an increase in recovery at a sufficiently reduced surface tension. The surface tension of the tap water associated with various pulps and stuffs does not vary enough to necessitate control of surface tension in the recovery determination. Beating was found to reduce surface tension of the associated tap water up to 7 dynes per centimeter.

The shrinkage of mats of unbeaten and beaten pulps upon drying in air decreased with decrease in surface tension, the effect becoming greater as the degree of beating was increased. Adsorption of wetting agent blocking off available surface for fiber-fiber bonds is recognized as a possible second factor in reducing shrinkage.

Literature Cited

1. *Paper Trade J.* 109 No. 8:35-42 (Aug. 24, 1939).
2. *Paper Trade J.* 113 No. 7:49-50 (Oct. 23, 1941).
3. *Paper Trade J.* 95 No. 8:29-33 (Aug. 25, 1932).

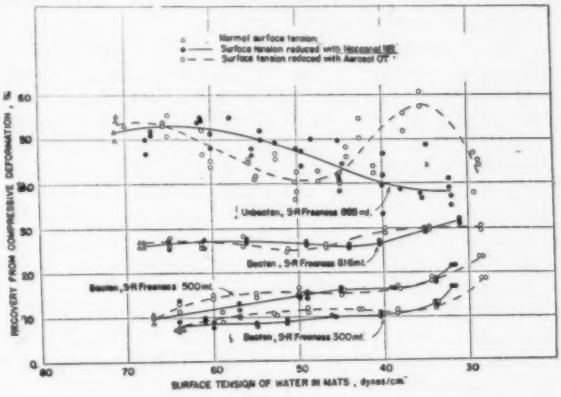
RECOVERY FROM COMPRESSIVE DEFORMATION, %
Unbeaten, S-R Freeness 885 ml.
Beaten, S-R Freeness 816ml.
Beaten, S-R Freeness 500ml.
Beaten, S-R Freeness 300ml.
SURFACE TENSION OF WATER IN MATS, dynes/cm.

FIG. 10

Relation of Surface Tension and Recovery of Unbleached Douglas Fir Sulphite Pulp and Stuffs at Constant Temperature.
Sample Weight 6 Grams on Moisture-Free Basis.

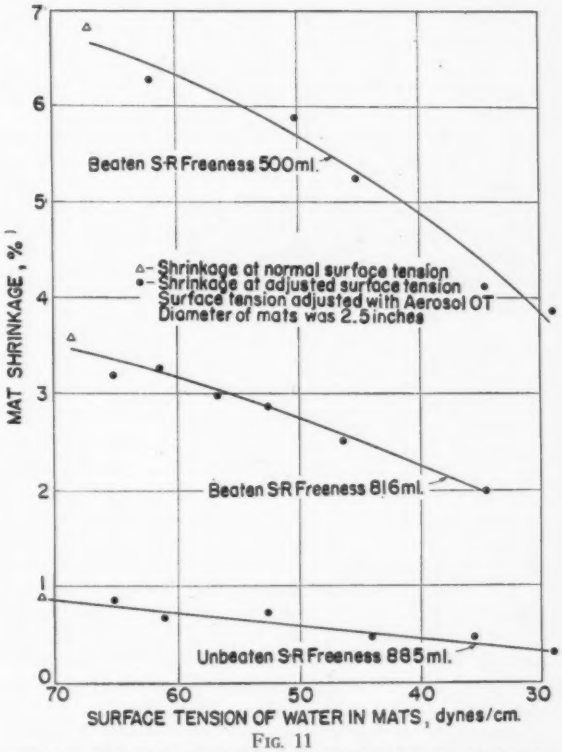
MAT SHRINKAGE, %
Beaten S-R Freeness 500ml.
Shrinkage at normal surface tension
Shrinkage at adjusted surface tension
Surface tension adjusted with Aerosol OT
Diameter of mats was 2.5 inches
Beaten S-R Freeness 816ml.
Unbeaten S-R Freeness 885ml.
SURFACE TENSION OF WATER IN MATS, dynes/cm.

FIG. 11

Relation of the Shrinkage of Mats of Unbleached Douglas Fir Sulphite Pulp and Stuffs to the Surface Tension of the Water in the Mats.

Pump Maintenance*

By H. Kingsbury[1]

Abstract

The construction and operation of centrifugal pumps are discussed briefly with emphasis placed upon maintenance.

There are many different types of centrifugal pumps but basically they are either of the single suction or double suction design. Each of these types are then broken down into single stage, double stage, three stage, and even up to six and eight stage pumps. Even with these different types of pumps, if the discussion is confined to one basic type, all types will have been covered.

In discussing the basic type of centrifugal pump, first, some device is required that will spin the liquid at a high speed. The paddle wheel device in which the blades or vanes curve out from the hub is called an impeller and is the heart of the pump. As the impeller is revolved, the liquid between the vanes is impelled outward by centrifugal force. The impeller is open at the center. This is called the eye of the impeller. As the liquid moves up through the blades by centrifugal force additional liquid is drawn in through the eye of the impeller provided the eye is not clogged. This brings forward maintenance rule No. 1: if there is any danger that foreign material such as sticks, rags, etc., may be sucked into the pump clogging the eye of the impeller, the intake end of the suction pipe should be provided with a suitable screen to filter out this foreign material.

The support for the impeller is furnished by a heavy shaft which must maintain the impeller in precisely the right place. Although the shaft is rugged, this will not protect it from the corrosive or abrasive effect of the liquid being pumped so the shaft must be protected with sleeves slid on from either end of the shaft.

What these sleeves and the impellers are made of depends on the liquid being pumped. If the liquor being pumped is water these parts are usually made of bronze. Slight alkaline liquid, cast iron is recommended; strong alkaline liquid, stainless steel; slight acetic liquid, bronze; strong acetic liquid, stainless steel. For the pulp and paper industries liquors the following are usually recommended:

Black liquor (weak)	Cast iron
Black liquor (strong)	Stainless steel
Green liquor	Stainless steel
White liquor	Stainless steel
Sulphite liquor (weak)	Bronze
Sulphite liquor (strong)	Stainless steel

This brings out maintenance rule No. 2, never pump a liquid for which the pump is not designed.

Whenever a change in pump application is contemplated and there is doubt as to the ability of the pump to resist the different liquid, check with the pump manufacturer.

The shaft is mounted on bearings either sleeve, roller, or ball. If these bearings are allowed to wear excessively and lower the turning units within the pump's closely fitted mechanism, the life and efficiency of the pump will be seriously threatened. This brings up maintenance rule No. 3: keep the right amount of lubricants in the bearings at all times. Follow the pump manufacturer's instructions.

Too much oil will not injure a sleeve bearing but too much grease in an antifriction bearing will promote friction and heat. The chief job of greasing antifriction bearings is to protect the steel elements against corrosion. Operating conditions vary so widely that no rule can apply for the changing of lubricants. Therefore change lubricants reasonably often depending upon the operating conditions.

Some pumps are built with the pump and motor on one shaft—close coupled—and offer no alignment problem, but some are driven by a separate motor. A flange or coupling is attached to the end of the pump shaft which in turn is fastened with coupling bolts to a flange or coupling attached to the motor.

This brings up rule No. 4: see that pump and motor half couplings are parallel vertically and axially and that they remain that way. If shafts are eccentric or meet at angle, every revolution throws extra load on the bearings and shaft of both pump and motor and causes excessive wear on shaft sleeves. Flexible couplings will not correct this condition, if excessive.

Checking alignment should be a regular procedure in pump maintenance. Misalignment is a major cause of pump and coupling wear.

A pipe is connected to the casing passage through which the liquid can be drawn and the horizontal piping slopes upward toward the pump. This upsloping prevents air pocketing in the top of the pipe, which air might be drawn into the pump and cause loss of suction. The term "loss of suction" or "loss in prime" means that due to the presence of air the solid column of water is broken in the impeller causing the pump to stop delivering liquid. Rule No. 5 is to be sure it is impossible for air to pocket in the suction piping.

When the original installation is made, all piping should be in place and self-supporting before connections are made to the pump casing. Openings should meet with no force otherwise the casing is apt to be cracked or sprung enough to allow closely fitted pump parts to rub. It is good practice to check piping supports regularly to see that loosening or settling of the building hasn't put strain on the casing.

Action of Pump

In a double suction pump the water flow is divided inside the pump casing reaching the eye of the impeller from both sides. As water is sucked into the spinning impeller, centrifugal force causes it to flow outward building up a pressure at the outer periphery of the impeller, and creates a low pressure near the eye area of the impeller. The liquid tends to suck back from pressure to suction through the space between the casing and the impeller. This leak must be plugged if pump is to be very efficient. It might be asked why the parts were not built closer fitting in the first place—instead of narrowing this gap by inserting wearing rings. The answer to this is that the rings are removable and replaceable when wear enlarges the tiny gap between the rings. This

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[1] Allis-Chalmers Mfg. Co., Milwaukee, Wis.

brings out maintenance rule No. 7: never allow a pump to run dry (either through lack of proper priming when starting or through loss of suction when operating). Water is the lubricant between the rings and casing. Rule No. 8: examine wearing rings at regular intervals. When they show serious wear their replacement will greatly improve the pump efficiency. The material used for these rings depends on the liquid being pumped.

Now to keep the air from being sucked in between the casing and the shaft, stuffing boxes are used. Each stuffing box consists of a casing, rings of packing, waterseal ring, and a gland at the outside end. Maintenance rule No. 9 is that packing should be replaced periodically—depending on conditions—using the packing recommended by the pump manufacturer.

Forcing in a ring or two of new packing instead of replacing the worn packing is bad practice and is apt to displace the waterseal ring which would cause stoppage of the sealing water. When renewing packing each ring of packing should be inserted separately staggering adjacent rings so the joints where the ends meet do not coincide.

In the center of each stuffing box is a waterseal ring. Either by connecting it to an outside source of clear water or if the liquid being pumped is clear water, connecting it to the casing at a point near the impeller rim, liquid under pressure is brought to the stuffing box. This liquid acts both to block out air intake and to lubricate the packing. The water makes both shaft sleeves and packing wear longer provided the liquid is clean.

This brings up another rule; do not tighten the gland more than is necessary. The gland should be just tight enough to allow a thin stream of water to flow from the stuffing box during pump operation

The discharge piping completes the pump installation. It is possible to analyze the various factors and forces under consideration. Start with the suction side where at least 75% of centrifugal pump troubles are found. First the total suction lift, that is the static suction lift plus the friction loss in the suction piping, should not exceed 15 feet. The piping should be at least a size larger than the suction nozzle of the pump. All friction in the piping should be minimized by using as few and as easy bends as possible. Referring to suction piping when pumping paper stock sufficient size pipe should be used to keep the velocity of the stock at a maximum velocity not over 5 feet per second. When connecting the suction piping to the suction flange of the pump do not use a taper reducer, instead use a dutchman as a reducer. This will somewhat reduce the problem of air binding as the frictional loss handling paper stock is about ¼ of what it would be through a taper reducer. Also make the piping arrangement as short as possible and locate pump so as to have minimum suction lift and when handling paper stock a flooded suction condition at all times is recommended.

The discharge lift, plus the suction lift plus the friction loss in the piping from the point at which the liquid enters the suction piping to the end of the discharge piping equals the total head.

All pumps should be operated near their rated head otherwise pumps are apt to operate under unsatisfactory and unstable conditions which reduce the efficiency and operating life of the pump.

Pump capacity is generally measured in gallons per minute. A new pump is guaranteed to deliver its rating in capacity and head but whether a pump retains its actual capacity depends to a great extent on its maintenance. In other words wearing rings must be replaced when necessary, friction loss in bearings and stuffing box must be minimized by lubrication, and misalignment must not be allowed.

Likewise the power of the driving unit will not remain at a constant level without proper lubrication and maintenance. The starting load on the driving unit of a centrifugal pump can be reduced by throttling or closing the pump discharge valve upon starting and then immediately reopening discharge valve.

All centrifugal pumps are basically alike. In the double suction pump, the liquid is sucked in on each side of the center of the impeller and thrown out at the periphery. In single suction pumps the liquid is drawn into the eye of the impeller from one side. Unlike the other pumps, there is no problem of alignment when the pump is of the close-coupled type. In the multistage pump there are double or single suction impellers, the discharge from one impeller being led through interstage passages to the suction of succeeding impellers.

The open impeller pumps are designed for pumping liquids containing heavy matter such as paper stock, sewage, etc., without clogging. This type of pump differs from other pumps chiefly in having renewable side plates instead of wearing rings and should be of extremely rugged construction.

In the pumping of paper stock to 5% moisture-free consistency, there are numerous condition which cause pumping problems. One of the most important of these troubles is that of air binding. Each and every case of air binding may or may not be corrected in the same manner. The airbinding might be due to one of the agitator blades in the stock chest. If this blade passes close to the pump inlet it is probable that with each revolution of the blade, air is drawn down into the stock past the inlet which will allow this excess air to be drawn into the inlet pipe and into the pump causing air binding, which in turn causes the pump to loose prime. By the removal of this agitator blade the air binding will probably be corrected.

Another installation which may and has caused air binding is the use of a taper reducer connecting the suction piping to the suction flange of the pump. The taper reducer causes a pinching effect on the stock resulting in a plugging condition which air binds the pump. By removal of the taper reducer this effect will be corrected and the friction loss through this point will be reduced approximately four times.

Still another cause of air binding occurs when the pipe discharge filling the stock chest discharges directly over or near the inlet to the pump. This causes air to mix with the stock and forces it down into the inlet piping. By extending this discharge to the other side of the tank the trouble may be cleared up and the air binding corrected.

After these other causes have been checked there is another method which may correct air binding troubles and that is to cut off the inlet vane tips of the impeller. These should be cut from approximately 3½ inch back along the outer edge of the vane to zero at the hub of the impeller.

There is a method of pumping paper stock without air binding by using a Hi-Density feeder unit. This unit consists of a stock pump with its drive and a Hi-Density feeder and its drive. The unit will successfully pump 8% moisture-free consistency

stock without air binding. As long as the feeder unit is running the pump will continuously pump without air binding. When the unit is shut down the stock does not flow but stays piled up into the discharge piping.

Always remember that the life of pumps depends on the maintenance given them.

Delaware Valley TAPPI Considers Coating Equipment

The TAPPI Delaware Valley Section opened the 1947-1947 season with a dinned meeting at the Engineers Club of Philadelphia on Thursday evening, September 25th. The main floor banquet room has been rserved for the monthly meetings for this season in order to accommodate the increased attendance at these meetings. The chairman, John Macadam of the Vulcanized Fibre Company, opened the meeting by calling for reports from the various officers and committee chairmen. Kingdon R. Watt, the chcairman of the membership committee reported that the section had gained 57 new members during the past year, bringing the paid-up membership to 201. John Weidner of the Container Corporation of America and chairman of the Program Committee ,announced that arrangements had been completed for the next three meetings and that the subject for the October 23rd meeting would be Urea and Melamine Resins.

Frank W. Egan, of the Frank W. Eagan Company was introduced as the speaker of the meeting, and he discussed the "Fundamentals of Coating" as related to the equipment required. He described and illustrated with blackboard sketches the ten basic types of coaters. These ten types are—dip, knife, cast, roll, brush, air, spray, print extrude, and strip coaters, although there are many variations of each type. A very lively discussion followed.

Among those attending the dinner were: A. I. Andrews R. W. Auten, W. Garwood Bacon, Jr., John L. Bahr, E. J. Barber, Alan R. Boyd, Don Bradner C. L. Brickman, H. C. Brill, S. G. Briscoe, Arnold M. Brown, Theodore S. Brown, Helen Cahan, L. B. Carothers, Lloyd W. Carpenter, John Carson, J. D. Clark, C. M. Connor, William D. Cregg, Thage Dahlgren, R. L. DePan, George H. Detwiler, D. S. Dieffenderfer, J. C. Dieffenderfer, W. P. Dohne, C. W. Dietrich, Jacob V. Edge, N. V. Edmanson, Frank W. Egan, Lawrence W. Egan, August S. Erspamer, James S. Evans, John Fachet, J. M. Farnum, Harry J. Farra, Jeanne Fisher, Hobart L. Geer, J. D. Gerche, Frederick W. Goetz, J. W. Goldring, Philip H. Goldsmith, Ralph E. Green, L. V. Hans, J. C. Harper, Jr., Arthur J. Haug, John Heist, Philip H. Hershey, Finley A. Hooper, George H. Hopkins, Valdemar Jacobsen, C. Jackson, S. T. Jamison, E. LeRoy Johnson, F. I. Kittredge, A. J. Kleiler, Geo. W. Knight, H. A. Lips, George D Lord, J. Macadam, John A. Manley, Ann E. McCloskey, Alex McInnes, Byron C. Miller, Edward V. Molin, T. S. Morse, R. J. Myers, J. A. Paciello, C. H. Rice, Philip Sadtler, W. K. Schlotterbeck, J. Carl Schmidt, Ralph W. Schafler, Edward A. Shallcorss, L. J. Smith, Clark E. Snook, Warren A. Steels, M. Stetner, Howard H. Street, G. Raymond Tomlinson, Kingdon R. Watt, Archie E. Waugh, John P. Weidner, Kenneth A. Whisler, G. C. Walton, Harold Wiles, W. R. Willets, Paul H. Yoder.

Niagara Falls TAPPI Holds Early Meeting

The first meeting of the fourth season of the Technical Association of Pulp and Paper Industry, Western New York Group—Empire State Section was held on Sept. 10, 1947 at the Prospect House, Niagara Falls, N. Y.

Dr. A. H. Nadelman, General Chairman, welcomed the group and introduced the ne wofficers. After that, Mr. Wm. Stauffer of E. I. DuPont de Nemours, Electrochemicals Department, gave a brief review of a meeting on cellulose and lignin chemistry, held recently in Appleton, Wisconsin, by the Fundamental Research Committee of TAPPI.

Mr. Wm. Monsson, Chairman of the Program Committee, gave a preview of the coming meetings. He then introduced the speaker of the evening, Mr. R. L. Murray, Vice-President in Charge of Research and Development, Hooker Electrochemical Company, who spoke on "The Chlor-Alkali Industry, Its Past, Present, Future."

The growth of the chlorine industry in the United States, Mr. Murray stated, has, since the beginning of the war, expanded from 2,000 tons of chlorine per day to 4,000 tons per day, and is still increasing. Of the 4,000 tons of chlorine produced per day, approximately one fourth is used by the Paper Industry in the production of much needed pulp and paper.

The United States ranks first in the world in the production of chlorine, after which comes Germany, based on peace time capacity, Great Britain and Japan. Approximately 8,000 tons of chlorine per day are produced in the world. Of this total, the United States produces more than half. Mr. Murray stated that Niagara Falls leads in producing more chlorine than any other city in the world.

The three principal operating processes for producing chlorine are:

1. Electrolysis of Brine.
2. Electrolysis of Fused Salt.
3. Salt—Nitric Acid Process

Mr. Murray showed slides and pictures of bombed factories and cities in Central Europe and related many interesting facts about the German industries.

The meeting was attended by fifty technical men from the different industries in Niagara Falls and surrounding territories.

Among those present were: H. B. Adams, E. F. Andrews, H. P. Bailey, L. E. Bauer, R. T. Benes, Jr., W. C. Brooks, G. M Bramann F Casciana, J. P. Early, K. P. Ewing, C. B. Ferrara, A. C. Hayes, I. A. Hoelsstin, A. Heilborn, J. A. Hoffmeister, E. C. Malmstrem, J. Morrison, A. H. Nadelman, A. J. Norton, S. M. Scaletta, W. F. Schroeder, J. E. Seymour, W. O. Stauffer, W. A. Stone, G. K. Storin, F. H. Stuart, C. E. Taylor, E. F. Tucker, J. A. Walker, C. O. Webber, J. L. Wood, V. Woodide, J. W. Youngchild, V. Hubert, W. H. Monsson, R. L. Murray, G. E. Norton, G. H. Rand, Jr., L. R. Sagar.

Dr. Frank K. Signaigo Associate Director of Pioneering Research, Rayon Department of E. I. DuPont de Nemours Inc., Buffalo will address the Western New York Group, on October 15th at the Prospect House, Niagara Falls, N. Y. Dr. Signaigo will speak on the "Development, Production and Uses of Cellophane, Rayon and Nylon." Dinner will be served at 7:00 PM and the meeting will start at 8:00 P.M.